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Sails to Trails

REIMAGINING SAN DIEGO'S HISTORIC GROWTH CORRIDOR WITH QUICKWAY TRANSIT, THE BALBOA PARKWAY, MAX3 GREENWAYS, AND THE GREAT PARK OF NORTH PARK

Alan S. Hoffman
Lecturer in City Planning
San Diego State University
"Leadership Starts Here"

With a Foreword by
Rob Wellington Quigley, FAIA

And an Afterword by
Michael Stepner, FAIA, FAICP

Quickway Station, Brisbane, Australia

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Reimagining San Diego's Historic Growth Corridor
with Quickway Transit, the Balboa Parkway,
Max3 Greenways, and the Great Park of North Park

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Foreword

This is a remarkable document—insightful, inventive, controversial, and refreshingly grand in scope.

Urban planners tend to focus first on making "places" and envisioning the qualities those places might have to make a more vibrant and delightful community experience. Later, transportation experts figure out how to move people to and from the places.

Mr. Hoffman, by contrast, starts with transportation infrastructure (and its long history of public funding) and shows how it can be leveraged to enhance the public realm, seed neighborhood redevelopment and guide growth. He builds on the transportation network with a holistic and inclusive view stretching from mundane infrastructure upgrades to grand catalytic public open space. Our current bureaucratic thinking does just the opposite of course. Each problem and opportunity exits in isolation and is problem-solved as such.

Mr. Hoffman proposes a series of innovative public open spaces and green connections that seem almost alarming in our park-scarce mid-city. Yet, as the provided examples show, the proposals are quite reasonable when compared to the cities that we like to visit or live in. And will be absolutely necessary as the area increases in density.

Nothing is more important in our urban environment than creating pleasant, human scaled pedestrian connections between neighborhoods. Good cities have them and bad cities don't. In East Village, grass roots efforts have already started to leverage the city-planned 14th Street Promenade to serve not just as the heart of the community but as a link north to Balboa Park thru City College and south to the "Nudillo" at the edge of the Barrio. Imagine an engaging, colorful walk from Chicano Park thru dynamic East Village to Balboa Park, then continuing on the proposed Balboa Parkway to the Great Park envisioned below. San Diego would have a backbone of walkable boulevards and green, knitting together our densest communities.

East Village contains the last significant buildable land in downtown and build-out is likely in less than two decades. This makes Mr. Hoffman's focus on Mid-City relevant and timely. Much more than a planning exercise, the following document illustrates how San Diego might urbanize gracefully in a manner that maximizes our return on investments in infrastructure. It is sure to provoke thoughtful and meaningful dialogue about our urban future.

— **Rob Wellington Quigley, FAIA**
San Diego, California
October 2017

Biographical Notes

Alan S. Hoffman currently serves on the City Planning faculty in the School of Public Affairs at San Diego State University. A graduate of San Diego's Will C. Crawford High School, Alan holds a Bachelor's in Social Relations and Sociology from Cornell University, a Master's in Administration, Planning, and Social Policy from Harvard University, and a Master's in Urban Studies and Planning from MIT, where he was attached to the Center for Transportation Studies.

Alan has consulted on urban planning and transportation issues all over the US and internationally. He is the author of a major study, published by the US Federal Transit Administration, on *Advanced Network Planning for Bus Rapid Transit,* where he introduced the Quickway model to US audiences. He is also considered an expert in transit markets, particularly the issue of consumer choice, having conducted or been involved in numerous major market studies and having served on a panel on market segmentation in transit at the Transportation Research Board.

Alan has additionally consulted to organizations such as the World Bank, the Inter-American Development Bank, and the US Agency for International Development, in addition to serving on the research faculty of the Harvard Business School and as an Assistant Professor of Public Management at the INCAE Business School in Central America.

Rob Wellington Quigley, FAIA, is a nationally recognized architect whose work has garnered more than 60 design awards from the American Institute of Architects (AIA). In 2005, the AIA California Council honored Rob with the Maybeck Award—California's equivalent of the Gold Medal—for three decades of architectural design excellence. A native of Southern California, Rob earned his Bachelor's of Architecture at the University of Utah in 1969. Upon graduation he entered the Peace Corps, where he developed his skills designing and building afford-able housing in under-served areas of Chile. After two years of service, Rob settled in San Diego and opened his own architecture and planning firm. Shaped by his early experiences, he became a pioneer in the design of architecturally significant yet afford-able housing for the working poor.

Rob was also an early leader in the sustainable design movement, designing solar-powered homes in the 1970s, long before "green" became an industry buzzword. His work is driven by a deep sense of responsibility to conserve natural resources. A longtime student of the public realm, Rob has focused his recent efforts on civic and academic buildings. Signature projects include San Diego's new Central Library, the Leslie Shao-ming Sun Field Station at Stanford University, the Seventrees Community Center and Branch Library in San José, Ocean Discovery Institute's "Living Lab" in San Diego, and Bascom Library and Community Center in San Jose.

Michael Stepner, FAIA, FAICP, is the former City Architect of the City of San Diego, responsible for the city's general plan and growth management efforts and the preparation of community plans for both older and newly developing communities.

Mike was director of Land Use and Housing for the San Diego Regional Economic Development Corporation and serves as professor of Architecture and Urban Design at the NewSchool of Architecture & Design. In addition, he serves on the faculty of the Lincoln Institute of Land Policy in Cambridge, Massachusetts, and as a member of the Advisory Board of the Active Living, Planning, and Environmental Study. He earned his Bachelor of Architecture degree from the University of Illinois.

Mike is internationally recognized for his leadership and innovation in community planning, public participation, and visioning, advising cities nationally and internationally. He has received the Distinguished Leadership to Professional Planners Award from the American Planning Association, San Diego Chapter. In 1997, the San Diego Chapter of the American Institute of Architects awarded him the Community Design Award and officially changed the name of the award to the Michael J. Stepner Community Design Award. He received the Distinguished Leadership Award from the California Chapter of the American Planning Association in 1991 in recognition of his outstanding and sustained contributions to planning.

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I also would like to thank Rob Wellington Quigley and Mike Stepner for their contributions to this book as well as for their leadership in the design and planning communities. William Adams and Christopher Crotty also lent their eyes and thoughts to this work.

Four people are deserving of special thanks, and this book is dedicated to them. SDSU Professor Lawrence Herzog, "New Urbanist" Peter Katz, community activist Craig Jones, and landscape architect Vicki Estrada all encouraged me to continue planning and exploring solutions to our vexing problems even in the face of institutional intransigence and hostility. If San Diego or other cities are improved as a result, it is they who deserve significant credit.

Bicycle Parking, Main Train Station, Amsterdam

Preface: Growing into Paradise

This is the third document in the Paradise Project series. This series had its inspiration in Kevin Lynch & Donald Appleyard's famous 1975 study of the San Diego region, *Temporary Paradise?* Lynch & Appleyard presented a visionary approach to developing San Diego so as to preserve and enhance its many natural attributes while minimizing the negative issues associated with growth. But what they lacked were viable plans for implementing their ideas.

The Paradise Project looks at the single largest investments we make in our region—transportation infrastructure—and asks if we can use those investments to help better shape the kind of region, and the kind of city, that would delight and serve residents and visitors, business and the environment. The first document, *Preserving Paradise,* laid out the case for a different transit network than the one being developed for the region, and why it mattered: a time-competitive, high-efficiency transit system could have a transformative effect on the way the region grows and both the problems and opportunities we would face as a result.

The second document, *Moving About Paradise,* made the case for a new system more explicit: the region's growth plans all revolve around transit, but transit has largely failed to attract the markets that would need to use it in large enough numbers to make a difference. A plan designed to meet the needs of a much broader market would have an outsized effect on how the region grows. The document then presented a series of maps depicting how an improved transit plan—the Quickway Proposal—extends the reach of rapid and semi-rapid transit to many more residents, connects to many more destinations, and does so in significantly less travel time, all while improving the customer experience associated with waiting for transit and boarding vehicles. Much of this document has been included in the appendices to the book you are now reading.

The focus of this book, *Sails to Trails*, is surprisingly less about transit and more about how we grow as a region. It shows how to channel growth to create new public amenity while ensuring that the communities under intensive growth pressure are prioritized for the infrastructure that would support that growth. It further shows how the right infrastructure can effectively mitigate the impacts of traffic and parking congestion on quality of life and economic development goals. This paper goes beyond showing how the Quickway Proposal represents a different *strategy* for developing transit, to showing *how* that strategy can dovetail with other regional priorities to produce synergies, amplifying the impact of our transportation investments and producing real amenity and strengthened neighborhoods and communities. More specifically, this paper shows how transit infrastructure can be the catalyst for urban transformation, for the development of new public space, true bicycle infrastructure, and new parklands.

The strategy outlined in these papers directs transit dollars into projects in the more urbanized core of the region, but the benefits of effective transit go beyond those zones. The more effective the transit system is at connecting to employment, education, and other destinations, the easier it is to create viable connections from more suburban communities and the less traffic on our roads.


001
NW 23RD AVE.
VANGUARD

Introduction

In 1867, Alonzo Horton, frustrated that city leaders didn't see the vast economic and civic potential of relocating the then-small village from the area we today call Old Town to the area we now call downtown San Diego, bought the land himself and set about subdividing it. While standard US street blocks were 300 feet by 300 feet, Horton made his east/west blocks shorter, just 200', because that would yield more corner lots, which he could sell at a premium. Horton located a community square—what today we call Horton Plaza Park—in the center of his city, and located his hotel—the Horton House, of course—across the street from the park, to enjoy the view of some greenery. He laid out all the public rights-of-way as 80' wide, which was generous as a general standard, except for Market Street, which was 100' wide. He also took D Street—later renamed Broadway—and widened the right-of-way to 120' from his hotel to the waterfront, opening up a view of the bay.

From the beginning of modern San Diego, one thing developers understood, was that value drives locational decisions. The greater the perceived value of something relative to its price, the more people will be enticed to make the purchase. In this case, Alonzo Horton laid out Downtown so as to maximize the value of his hotel, placing it across from a view of greenery and a widened vista out to the bay. That value would drive guests to his hotel; the prevalence of street corners helped drive residents to purchase his lots.

San Diego's major leaps forward have always involved similarly bold action:

- The founding of San Diego by a group of Franciscan missionaries literally going into the unknown.
- The founding of modern San Diego by Alonzo Horton, who planned and developed downtown privately because there was no interest publicly.
- The setting aside of 1400 acres for "City Park"—what became Balboa Park—by Alonzo Horton and other city leaders, even though the park far dwarfed the small settlement.
- The planting of San Diego by Kate Sessions, who traveled the world finding plants that would grow in our dry environment, and who saved many older canyons from being filled in.
- The decision to hold a World Exposition here in 1915, even though San Diego had a tiny population.
- The creation of Mission Bay Park, the nation's largest public urban aquatic playground, out of False Bay.
- The opening of the first modern light rail line in the US, on the slimmest of budgets, by a city not known for transit.
- The creation of great regional parks: Mission Trails, the San Diego River Park, Peñasquitos Canyon, the San Dieguito River Park, etc.

Big Ideas are not unusual for San Diego; in a very real sense, San Diego was built on big ideas. Sometimes, big ideas can make some react skeptically, knowing how wrong things can go or fearing how expensive big ideas can be. But the size of an idea is an accident of the confluence of problems awaiting solutions, opportunities that present themselves, the resources that may be tapped and directed or otherwise influenced, and many other factors beyond the control of any one person or government. Sometimes, big ideas, once broken down into a series of concrete steps, become more real; other times, big ideas become more welcome once one has grappled with what actually may be expected from doing nothing or following through on our current plans. Sometimes our choices aren't between an idea and the way things are today, *it's between that idea and the realities we may wish to avoid in the future.*

This paper proposes some Big Ideas, many of which emerged from another Big Idea. That latter idea was that of creating a better transit system. Why a better transit system? In cities that have great transit, getting around is easier and cheaper; people can get to good jobs and people are free to devote their time to more important things than just commuting. These cities also seem to create more people spaces, whether parks, sidewalks, little plazas and squares, gardens, because transit creates pedestrians, and pedestrians love having interesting environments. Indeed, when we speak of visiting many cities, we often think in terms of their public spaces as much as their buildings.

Sails to Trails may have begun with smarter thinking about transit, but ultimately it's a vision of what a city should look like and operate like. In this case, it argues that San Diego's already dense urban communities can be vastly improved—and better serve the needs of Millennials, among others—with targeted investments and proactive planning.

While it is easy to read into the maps and depictions in this paper a sense of finality, the truth is that there may be other ways to accomplish the goals this paper sets out than the ways presented here. The purpose of this book is to stimulate a discussion of what we want for our investments in infrastructure. If any of the concepts presented here are one day implemented, I would hope that the planning and design process work closely with the community, both through direct involvement and through deep consumer research, to better understand how public investments could meet the broadest range of needs.

This is ostensibly a book about San Diego, but I suspect its greatest utility will be to those in other places. Cities everywhere are wondering how they can achieve greater results from their investments in transportation infrastructure, even as funds for that infrastructure are drying up. The problem becomes acute and begs whether and how the private sector might have a role in financing major projects. This book suggests that the right strategy can leverage transit investments to create parks, bikeways, and renewed pedestrian infrastructure and hence create enough value to drive significant private sector co-development, some value of which may be captured through one or another form of infrastructure-financing district.

Put another way, the more useful the transit, and the greater the amenity value, the more people will want to live and/or work by that system, which attracts developer interest. When planned and managed correctly, that mechanism can generate significant funding, but it also produces real benefits: this form of development is the most likely to meet long-term goals for greenhouse gas emissions, energy use, and impacts on roadways. It generates the least amount of auto traffic, the greatest amount of bicycling and transit use, as well as significant walking. But as proposed here, it ultimately is about San Diego capitalizing on its location and its opportunities to create more vibrant communities.

Sometimes our choices aren't between an idea and the way things are today, *it's between that idea and the realities we may wish to avoid in the future.*

1. The Problems We Need to Solve

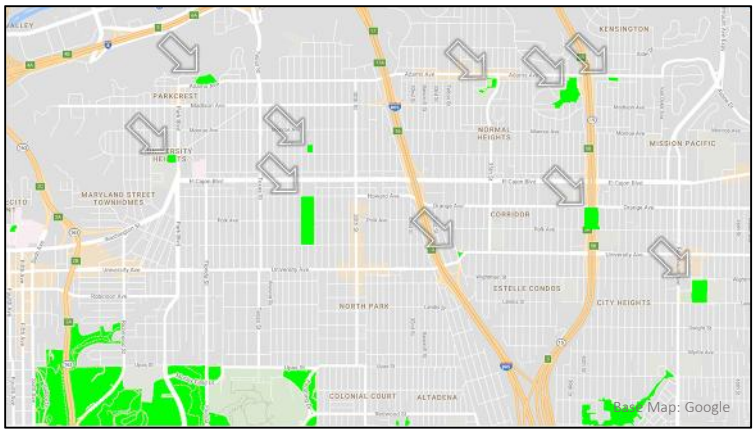


Figure 1.1
Parklands in North Park and Western Mid-City
North Park and the Mid-City communities suffer from a lack of parklands.

The central, urbanized zones of San Diego are under significant pressure as we move into the future. Some key challenges are highlighted here.

The question to be faced isn't *if* infrastructure investments can help solve these problems, but *how to ensure* that investments lead to measurable and significant improvements in this set of challenges.

Park deficit

North Park and Mid-City communities suffer from a notable scarcity of parklands (Figure 1.1). As this area is expected to grow substantially through new multifamily development, its need for parkland will only grow more acute.

At the same time, well-designed and located parkland not only can provide vital outdoor space for residents of multi-family residences, such parklands can anchor and orient such development (Figure 1.2), even attract it. Cities that place green at the heart of their urban communities reap multiple benefits, not the least of which are in the realm of public health; research has shown that low-income children, for example, who live by greenspace have lower levels of obesity than children who don't.

New water & sewage infrastructure

The City of San Diego features aging water and sewer infrastructure in its urban core. It will need to replace this infrastructure, but at a cost expected to rise into the billions of dollars. No adequate funding source has yet been identified.

Effective mobility choices

While new ridesharing services and the promise of autonomous vehicles will extend automotive mobility to those who might choose not to own a car themselves, there is still the problem of people getting to school, work, or other regional destinations, let alone getting around their community at an affordable price. The first document in the Paradise Project series, *Preserving Paradise,* and the appendices in the present book, explore our current plans as embodied in the Regional Transportation Plan (RTP), the San Diego region's blueprint as to what transportation projects it plans to pursue through the year 2050, as well as an

Figure 1.2
Fault Line Park
This park anchors intensive new development in the East Village.

alternative, the Quickway Proposal, which is designed to be a more effective and efficient system.

Building enough housing

The region suffers from an imbalance between supply and demand. The region is demanding about 14,000 new residential units a year, but is producing less than half that amount, increasing housing costs across the board and threatening the region's economy. While other "in-demand" cities are experiencing the same kinds of issues of housing unaffordability, San Diego can take action to reduce the housing shortage and reel in housing costs by better planning for areas where market forces are driving demand. It needs to provide these zones with the infrastructure necessary to absorb growth while mitigating the negatives associated with such growth. This paper highlights one example of how to accomplish this: the structural corridor (Figure 1.3).

Affordable housing

Housing affordability is the flip side of the mismatch between supply and demand. Part of the solution is to take pressure off existing housing stock by building enough new market-rate housing to better meet demand. Structural corridors can help the region meet this challenge.

Bicycling

San Diego is now facing the challenge of creating bicycle infrastructure to promote the use of bicycling as a transportation mode. San Diego has traditionally relied on bike lanes painted on the road, but this scheme often leaves cyclists facing many hazards, and such lanes often "disappear" at intersections where right-turning cars take over the space used by the bike lanes (Figure 1.4). Even current plans, which spend considerable money compared to past years, seem of curiously limited value (some of the limitations of the current plan are discussed in *Preserving Paradise*), or require the elimination of auto travel lanes and/or parking.

While these kinds of trade-offs *may* be worthwhile, their effectiveness is diminished if the cycling experience is still subpar or the geometries, especially slopes, exceed global standards. In *Preserving Paradise*, the first document in the "Preserving Paradise" series, it was noted that the new bikeway paralleling I-15 from Adams Avenue to Mission Valley far exceeds global standards for maximum sustained slope (4.8% vs. a global maximum of 3%, which itself exceeds the California Highway Manual's recommended 2% maximum).

Figure 1.3
Structural Corridor
This structural corridor in Brazil is perhaps denser than would be appropriate in many urban neighborhoods in San Diego, but nonetheless reaps the benefits of locating housing around rapid transit (the center road is an exclusive busway).

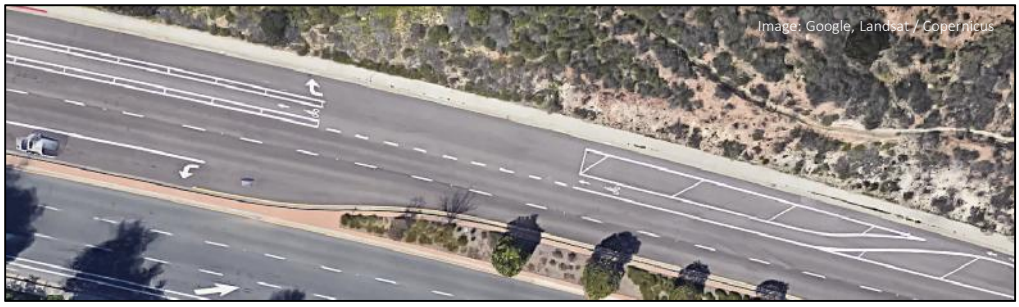


Figure 1.4
San Diego Bike Lane
In this example (Navajo Road by Golfcrest), cars turning right must cut across the bike lane. Cities like Amsterdam avoid designs like this.

Figures 1.5 (top) and 1.6 (bottom)
Bike Lanes in Amsterdam
Amsterdam's bike lanes are mostly separated from traffic *and* parked cars. In the example here, the entrance to a residential street is configured so that cars cross the bike lane, not the bike lane crossing a road.

Other global cities have been developing bicycle infrastructure that facilitates both speed and safety, that separates bicycles from automobiles to a great degree, and that both contribute to and support exceedingly high levels of bicycle use for multiple trip purposes. Amsterdam is one such city (Figures 1.5 and 1.6 depict the same location from the street and elevated); Copenhagen is another. The two cities are ranked as the top bicycle cities on the planet; in the U.S., Chicago and San Francisco rank highest among large cities, and Davis top among all cities.

The Millennial generation and beyond

There has been a notable and well-documented shift of the choices made by those in their 20s and 30s as to the environments they choose to live in, with larger numbers opting for urban, walkable neighborhoods and a greater willingness to not drive, compared with their predecessors. This generation has created significant market demand for the kind of urban environments that feature excellent transit, people spaces, and active recreation. From what we can see so far, post-Millennials seem to share the same urban orientation.

Congestion, air quality, and greenhouse gas goals

It is no surprise that congestion has been continuously worsening in San Diego. Projections made by SANDAG in 2003 of driving times for 2030 show that, for most currently developed parts of the metro region, the average driving trip of any sort will increase by about 1 minute (Figure 1.7), but for residents of much of Uptown, Greater North Park, and Normal Heights, their average drive will increase by 2 minutes, and for those living along El Cajon

Boulevard and 30th Street, their average drive will increase by up to 4 minutes, the worse anticipated increase in the region (Figure 1.8).

The RTP's plans to convert the 215 "Rapid Bus" on El Cajon Blvd to light rail will almost certainly necessitate the removal of automobile travel lanes; the question is whether crossing gates and bells will be required at major intersections. Either way, traffic is likely to spill over onto parallel roads. Since these roads are all two-way roads, there will be significant turning movements, braking, and back-ups. Quality of life for residents of the Uptown, North Park, and Mid-City communities will necessarily suffer.

The continued worsening of traffic and the absence of a *competitive* transit alternative for most people mean that cars will continue to be the primary movement system for most people most of the time, which, when combined with the congestion that is projected—and this is irrespective of whether or not autonomous, self-driving cars are employed—will make attainment of air quality and greenhouse gas reduction goals that much more difficult to achieve.

Solving our problems: looking for synergies

By all accounts, the list of challenges facing the region is daunting, and conventional responses to dealing with each carry a cumulative price tag that is far beyond identified funding sources.

As a region, we can continue to view each of these many challenges as distinct, and requiring a solution divorced from all others OR we can look for synergies, opportunities to combine efforts so that the solution of each one supports the other issues as well.

In the case of San Diego, this paper demonstrates how an integrated approach to problem solving not only makes solutions economically viable; it makes them work better together (Figure 1.9). The core argument is this:

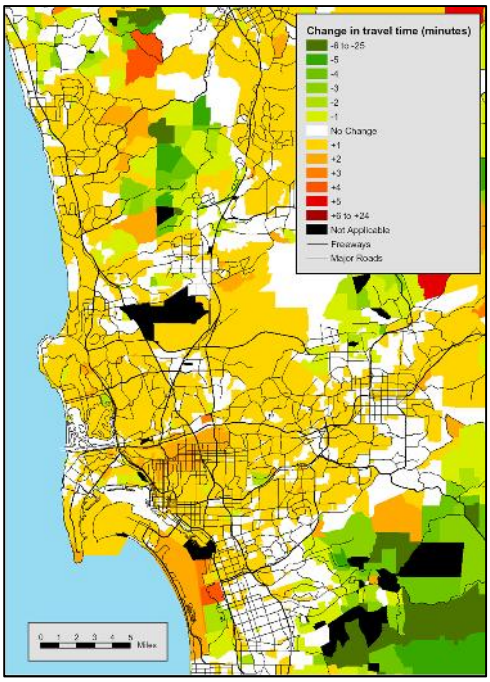


Figure 1.7
Change in Drive Time, 2003-2030
For much of the metro area, auto trip times are expected to increase by about a minute on average.

a. We need to renew infrastructure. The core areas of the City are in need of new water, sewer, and even storm water infrastructure, but the City can't afford to replace all of these.

b. **Transportation dollars are *historically* easier to obtain.** While funding for

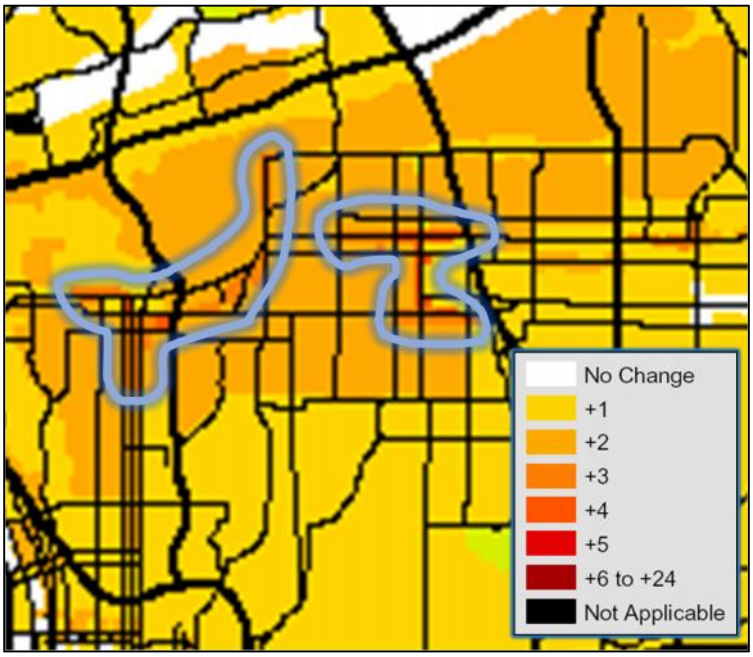


Figure 1.8
Change in Projected Drive Time for Uptown / North Park / Western Mid-City, 2003-2030
This zone is projected to have the greatest increase in drive times, with some locations seeing increases of 25-30%.

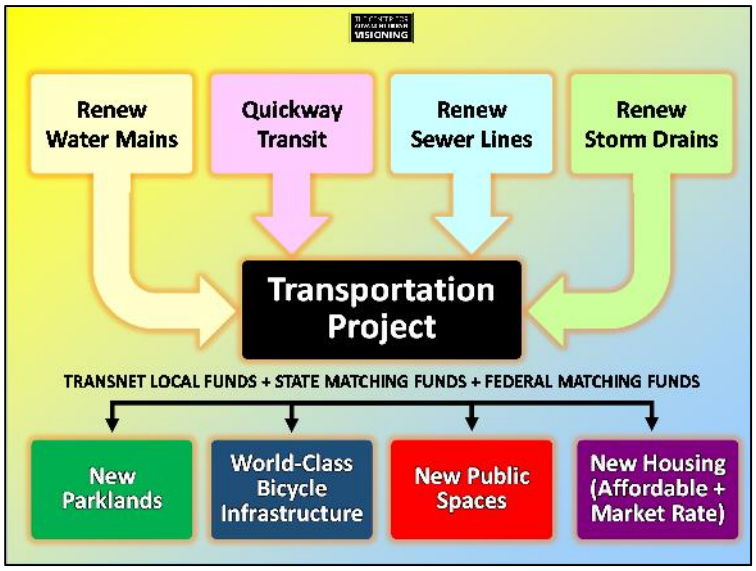


Figure 1.9
Combined Water, Sewer, Storm Drain, and Transit Project
Combining these projects into one generates major cost savings, allows San Diego to better leverage State and Federal funding sources, and can potentially produce far more benefit to the region.

transportation projects is insufficient for the projects in our 2050 Regional Transportation Plan (RTP)—over-projections of revenue by SANDAG have led to serious shortfalls—for decades transportation capital dollars were easier to obtain than operating dollars. Still, the creative combining of local funding sources can open up opportunities for significant matching funds at the State and Federal level.

c. The urbanized core should be a top regional priority for transit infrastructure. A strong case can be made for upgrading the investment in transportation infrastructure in the urbanized core of the region. Ridership projections by both SANDAG and third parties have identified significant latent demand for transit in the core urban areas of the region, with ridership strong enough to warrant the use of grade separation—most likely, tunnels—in much of the more urbanized part of the region, particularly much of the "Sails to Trails" corridor that is the focus of this paper.

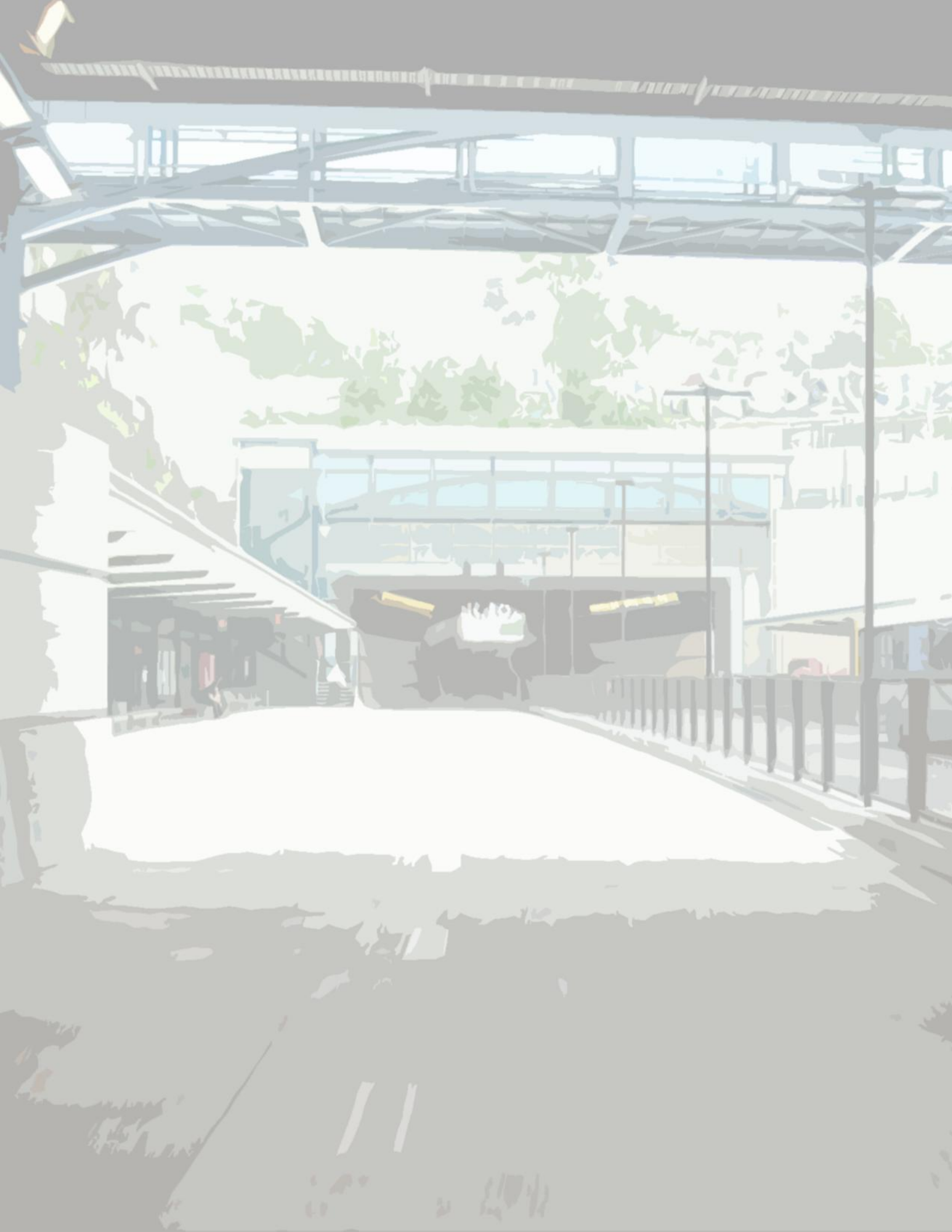
d. Combining the projects makes them viable. Combining water, sewer, and storm water projects *with* a major transit project both lowers total costs (dig once) and allows for greater fund matching opportunities. Since water, sewer, and storm drains will necessarily need to be rebuilt as part of a transit tunnel program, these efforts become part of that project; any funds for these become part of the "local match" component that increases State and especially Federal funding.

e. Designing projects together saves money. When planned jointly, opportunities arise to design system components so that individual elements do double-duty, further saving funds. An example was given in *Preserving Paradise*, the first discussion paper in the Paradise Project series (Figure C.2, "Hillcrest Tunnels") in which transit tunnels may be built so as to reduce the future costs and inconvenience of building warranted traffic tunnels.

f. Other amenities become viable when part of the transit project. Thoughtful approaches to planning can further maximize the value of these investments by designing additional amenities into the project, particularly as described in Chapter 5 (North Park and Western Mid-City) of this paper.

In other words, the right transit project, warranted by potential ridership and redevelopment potential, is the vehicle by which many other desired improvements become economically viable as a component of the transportation project. This is the one of the key messages of this paper.

The next chapter makes the case as to why the adopted transit strategy matters; the right strategy can produce a viable solution, the wrong strategy can underwhelm and produce meager benefits relative to the high cost.



2. Solving Problems: Why Transit Strategy Matters

"A city shouldn't be built around its transportation plan... a transportation plan needs to be built around a city."

The challenges of the future are not just the challenges of growth; they're also the challenges of quality of life, of broad-based prosperity, and of environmental preservation.

Long-range transportation planning should not be just about creating system capacity. It should be equally concerned with where and how a city or region grows, understanding that transportation choices can shape where development occurs and how people choose to get about.

It's more and more difficult to get around San Diego. Our current transportation plan will try to keep it from getting much *much* worse, but it still gets worse. And that's what we have to look *forward* to. Individual projects certainly have their merits; for example, the new Mid-Coast Light Rail Trolley line will improve transit connectivity between Downtown/ Old Town and the Golden Triangle, but a previous study found that for every trip that *could* be taken by the new Trolley line, *ten* trips will *not* be able to take advantage of the line because the Trolley doesn't make the connection, so that even if 1/3 of potential trips use the Trolley (a *very* optimistic projection), that only accounts for 3% of trips involving the Mid-Coast. What about the other 97% of trips?

A city shouldn't be built around its transportation plan, especially if that transportation plan struggles to figure out how to pay for all of the transit that will be provided when its contribution to regional movement goals doesn't nearly match the dollars spent. A transportation plan is both an anticipation of where people will be and where they'll be going *and* a statement of hope: *this* is where the region *should* grow.

A transportation plan needs to be built around a city. Robert Cervero of UC Berkeley published an exceptional study on the relationship between transit and the cities it serves. *The Transit Metropolis* suggests that cities like San Diego achieve success when the transit system *adapts* to the city as it is *today*. The purpose of transit is to serve *where we are* and *where we're going*. The purpose is not to build things or to shunt powerless people through a "system" or meet programmatic goals or direct growth where the market is not interested or to pursue pet projects. The purpose of transit is to serve a city as it is, to meeting real needs.

The best way to develop a cost-effective transit plan is, paradoxically, not to begin by self-censoring concepts due to cost. Cost is indeed a huge object, but when answering the question, "what does a solution look like?," you need to know, above all else, *what a solution looks like*. You need to actually solve the problem. So when asking, how can a transit system best serve a city, you must think of connections first, and only *then* think about costs.

The exercise is hardly pedantic. Too often, transit projects are pursued on a corridor-by-corridor basis, with no overarching sense of what a "solution" looks like or how the network as a whole performs. Any transit solution must be framed in terms of its outcomes, both strategic (describing the role transit plays in a city) and empirical: the number of riders it attracts, the land value and new development it creates and attracts, its broader impact on the region, the percent of a region's residents who have access, the amount of time it takes people to move through the system door-to-door, and, ultimately, what it costs to operate that system. Even

without being fixated on costs, creating an effective system is hardly a given.

Once an "idealized" transit network is devised, the question becomes: how can this network of connections be most cost-effectively produced?

The lessons of Curitiba, Brazil, were discussed in *Preserving Paradise*. Curitiba followed this methodology to evolve their regional rapid transit network (Figure 2.1), among the most influential of the past 40 years:

Figure 2.1
Curitiba's Transit Network
Curitiba devised a system made up of distinct overlaid service networks. The thick lines are "surface subway" lines running in median busways and stopping at all stations. Every 3-5 km they serve an "Integration Terminal" (larger circles). An overlay express network links these terminals as well as key destinations off-corridor. Feeder routes connect surrounding communities nonstop to these terminals as well.

Another key feature of this system is that suburban communities often feature direct back-and-forth shuttles linking them with an Integration Terminal. Residents of these suburban communities have a direct (rapid, non-stop) link to the transfer center, then access to the express network, giving them access to the entire region at competitive travel times.

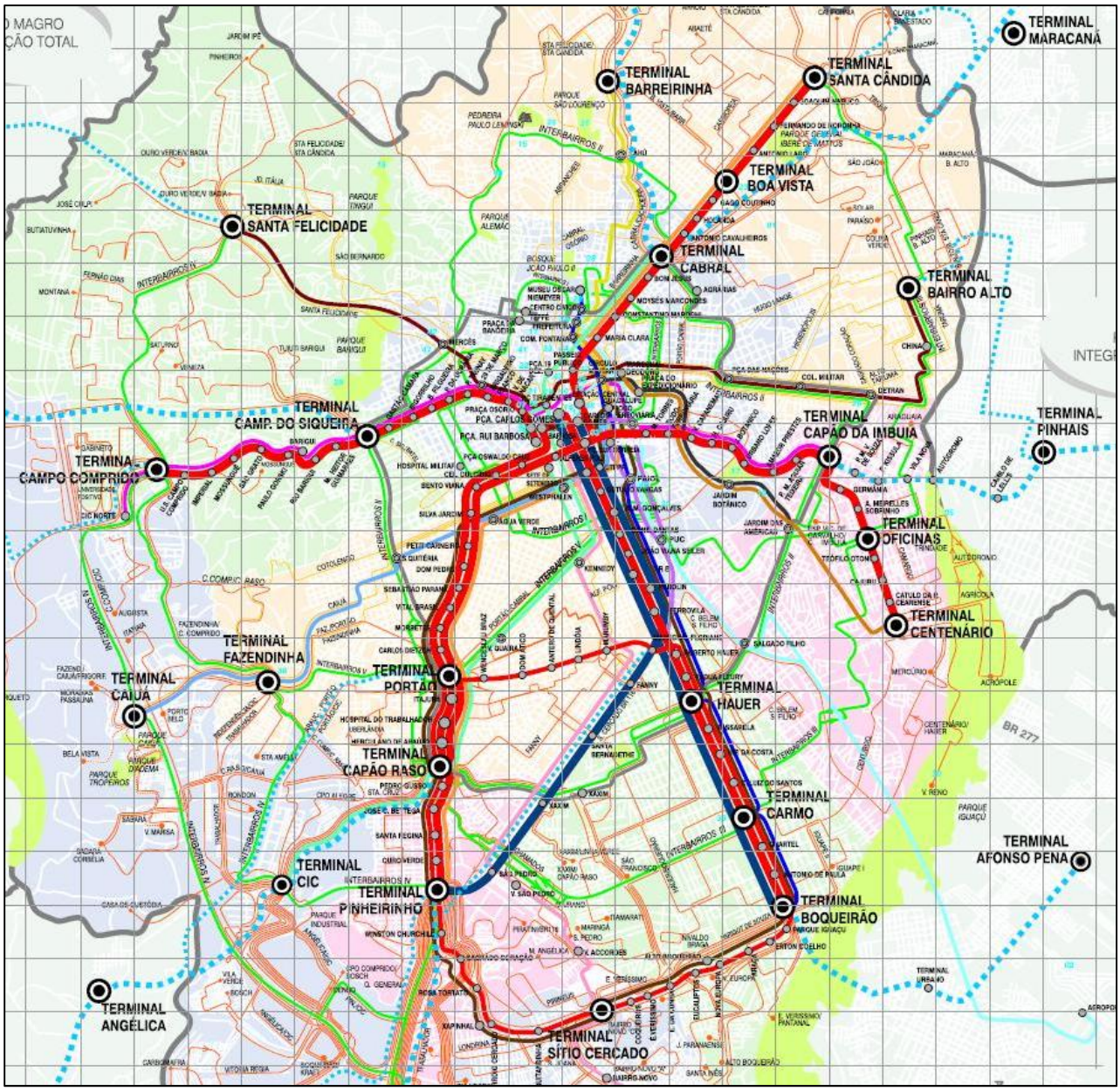
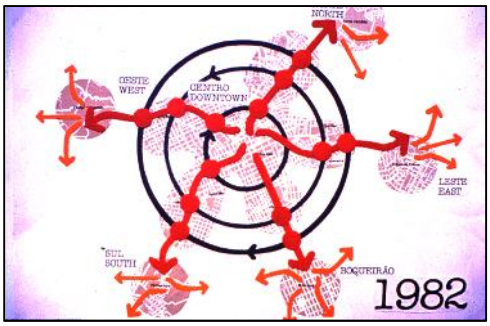


Figure 2.2
Curitiba's Transit Strategy
Curitiba devised an optimal metro network, then replicated it on the surface using buses.



1. They demonstrated a solution. They came up with their idealized plan (Figure 2.2) by imagining they were creating a subway system *even though they couldn't afford a subway system.* They determined where stations—and the land use development they would enable—should go.

2. They mimicked that solution using low-cost pieces. They replicated their *ideal* subway system on the surface using buses.

3. They reconfigured streets as necessary. They reserved right of way on the surface in the middle of five boulevards to support their five principal radial lines by converting parallel roads to one-way "smooth flow" roads (the author's term, not Curitiba's)—relatively low-speed but signal-timed to permit cars to flow in and out of the central core without needing to stop at a red light.

4. They made it "feel" rail-like. They duplicated the *experience* of a subway system by creating modular "tube stations" (Figure 2.3) that one pays to enter; one then steps on and off the buses at level through multiple doors when they dock (sliding glass doors separate passengers from moving vehicles) just like a subway line (Figure 2.4).

5. They built around it. They created "structural corridors" (Figure 2.5)—channeling most high-density to the single blocks on either side of their busways (essentially, the two blocks inside the two "smooth flow" roads).

6. They made it faster. They created an overlay express network, linking "Integration Terminals" (spaced every 3-5 km.) with major destinations off-corridor, essentially leapfrogging their region.

Curitiba's system isn't their "final" build-out; plans call for busways to eventually be replaced with metros or other higher-capacity modes. But the strategy has allowed them to cover their region with a dense network of rapid transit services (Figure 2.6) and go from moving 7% of commuters by transit in the 1970s to over 70% by the turn of the millennium—and this in a city with Brazil's second highest rate of automobile ownership.

If San Diego learns from Curitiba's strategy, it can begin to develop a far more effective transit system. It starts out using buses (albeit, like Curitiba, ones outfitted to more resemble rail cars than traditional "city buses"), but may evolve into other modes over time as the system is built out and its performance better understood.

Figures 2.3 (bottom) and 2.4 (right)
"Tube" Station in Curitiba

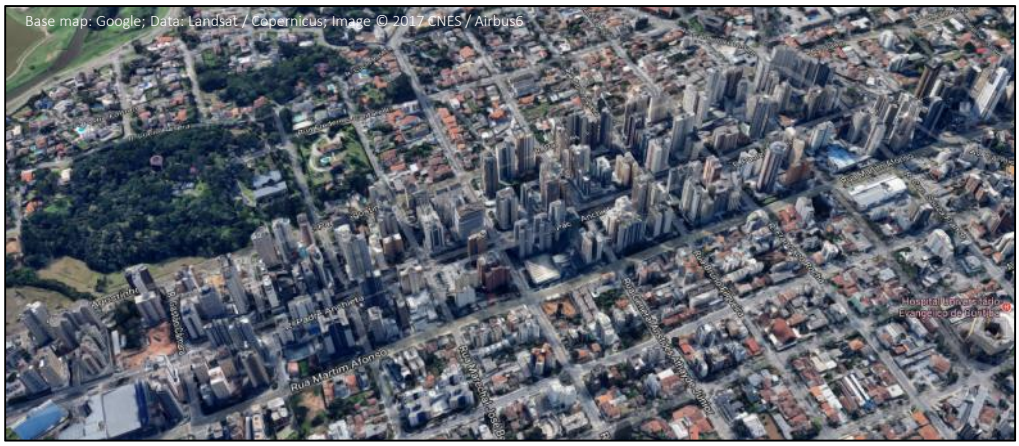


Figure 2.5
Structural Corridor
Curitiba restricted most high-density development to within one block of "surface subway" lines. The results, paradoxically, preserve most of the city for single-family and other lower density neighborhoods.

The benefits to San Diego would be huge: a much higher likelihood of meeting our long-term goals and effectively solving our long-range challenges

So what would a strategy look like for San Diego? It's connected to a land-use vision, one that grows out of the place we are and the places that people value. The notion is, we grow dense in our core zones, *not* our single family neighborhoods , and then:

- **Connect.** We connect our cores together with a regional *express* network,
- **Cover.** We make sure that transit effectively serves/connects *within* each core area, and
- **Extend.** We connect outer places with nodes in the express network so that everyone has access to regional destinations in travel times competitive with driving.

1. We think about parks and people space. "People Space" is the public space useable by people. It includes sidewalks but not roads, parks but not otherwise unusable landscaping. We need to place parks and public space at the heart of where we expect to grow more densely. This can be incredibly expensive to do, so any possibility of getting major parklands as elements of broader projects, or any possibility to leverage investments in parklands, should be vigorously pursued.

2. We grow densely in our "core zones." The RTP (Regional Transportation Plan) calls for most new housing development, the vast majority of which will be multi-family, to be built within ½ mile of a "high-frequency" transit route (such as a bus route with a bus every 15 minutes). The problem, though, is that this is still spreading density over a very wide area, (where it will still be cost-prohibitive to serve), and most people who have a choice don't use current transit alternatives. A better choice might be to concentrate densities around effective infrastructure in the hearts of more urbanized communities

Figure 2.6
Curitiba Network Evolution
Curitiba's strategy allowed them to cover their region in just 23 years.

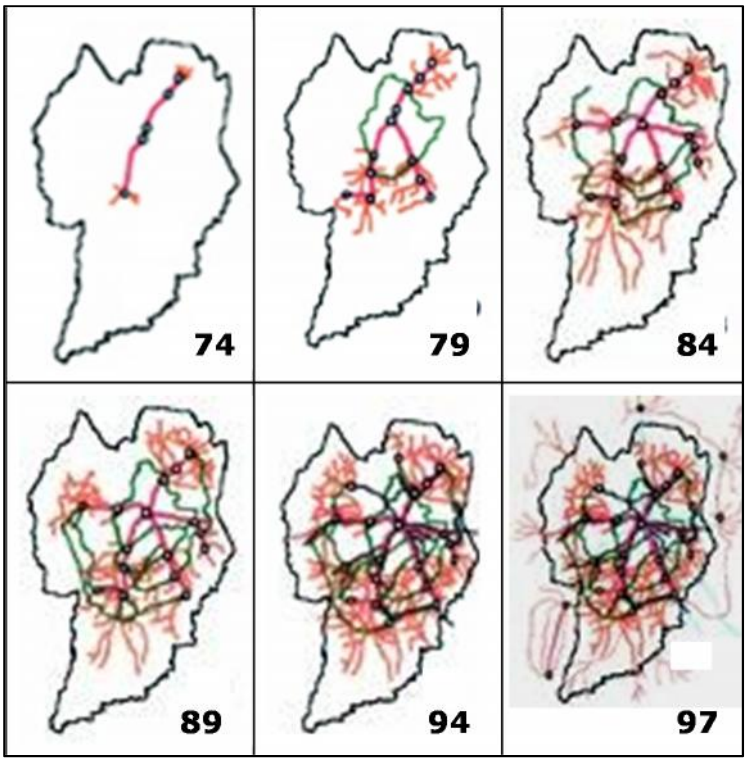


Figure 2.7
"Six Pack" Apartment Building in San Diego
While such buildings provided affordable housing, they did so in a way that generated negative impacts on their neighborhoods.

and use transit to connect each central core area with all others, as directly and rapidly and efficiently as possible, all while *designing* an experience that significantly improves the waiting environment (stations). And if we're able to place parks and people spaces in urban communities, these are the natural places where growth would want to occur.

A fascinating example is the new "Fault Line Park" in the East Village of Downtown San Diego (Figure 1.2, previously cited). Though relatively new, it attracts many users, from a large homeless encampment to families with small children to the people just hanging out on their laptops or phones in the two cafes that sit at opposite corners and heights from each other. There is a tall residential tower that anchors the park and a second tower under construction; a third, unrelated tower is under construction across the street, And this in a part of the East Village close to the social service centers that cater to the large homeless population. The point is, the park anchors significant new development and clearly improves the quality of life of the many people who take advantage of the green space.

3. We preserve our single-family neighborhoods. Many of these neighborhoods in the older parts of the city saw the introduction of "six-pack" apartment buildings, especially in the 70s-80s; these buildings often clashed with their neighborhoods in many ways, ranging from the replacement of front landscaping with a concrete slab for parking, buildings often built cheaply, affording residents little privacy but lots of noise, and in many cases depressed home values (Figure 2.7). Zoning codes finally caught up and required better and more sensitive designs, but many cases of these older buildings still remain. We need to create mechanisms by which developers get credits when they replace these buildings with ones conforming to current codes, or even better, something that fits into their neighborhoods, and create new affordable units in compensation, credits

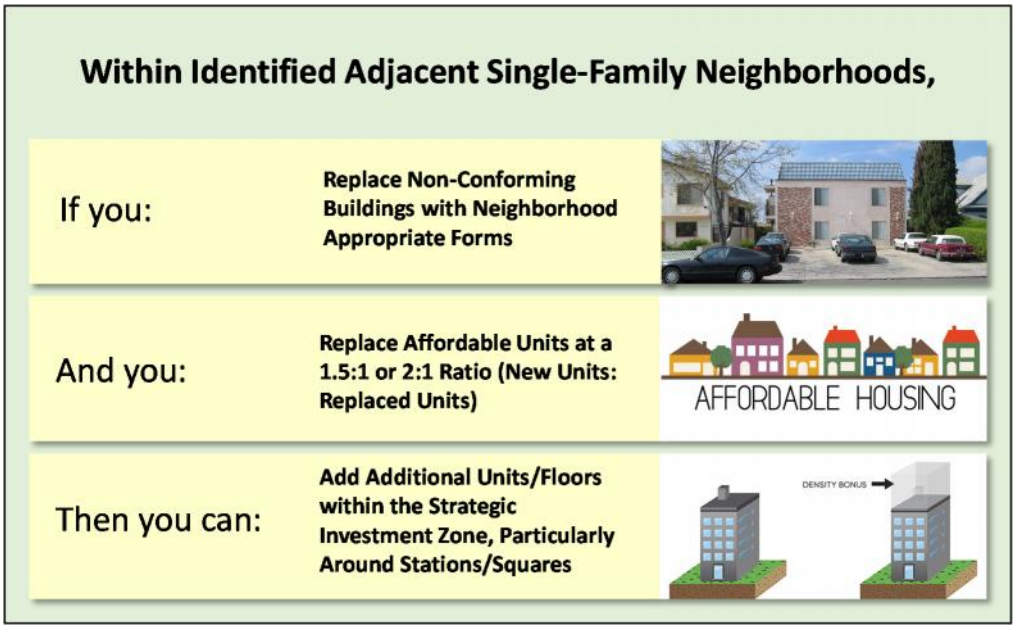


Figure 2.8
Neighborhood Restoration Strategy
A strategy that provides real incentives to replace non-conforming buildings with neighborhood-appropriate ones can help solve multiple problems.

that can be used to add floors to projects located adjacent to rapid transit stations (Figure 2.8). In essence, we use the *locational value* of new transit stations (a value which is enhanced because of the larger set of destinations that can be reached in less time and greater convenience than with our current system) to create the mechanisms for healing our residential neighborhoods.

4. We connect the cores with *express* transit. "Rapid Transit" may be used to describe any transit service that maintains a minimum 18 mph through-speed along a substantial part of its length during the peak commute. "Express" transit tends to be much faster, because it skips stations, stopping perhaps every 2-5 miles, instead of every ½-1 mile. When the cores are connected by express transit, it becomes easy to get around the region by transit.

The next issue is how people get to the cores from surrounding areas, and that means thinking more about how we serve the areas near express stations and how we can deploy transit to make it easy to access the broader zone. For more suburban locations, where park-and-ride stations would be likely nodes, the goal is to connect people as quickly as possible into the express network, so that they may then get to most regional destinations easily and speedily.

A transit system that was built around San Diego's cores is not too hard to imagine, with key nodes in places like the center of Hillcrest and the center of North Park (essentially, by both communities' signs; the presence of a sign suggests a node in a future transit network), and an effective means of building off the investment in light rail in Mission Valley by linking employment sites to the Trolley, as well as to origins in Mid-City and Uptown.

Figure 2.9 depicts one potential configuration of an express overlay network in San Diego, serving "SuperStations" spaced an average of 2-5 miles apart (as well as select other destinations). It conveys

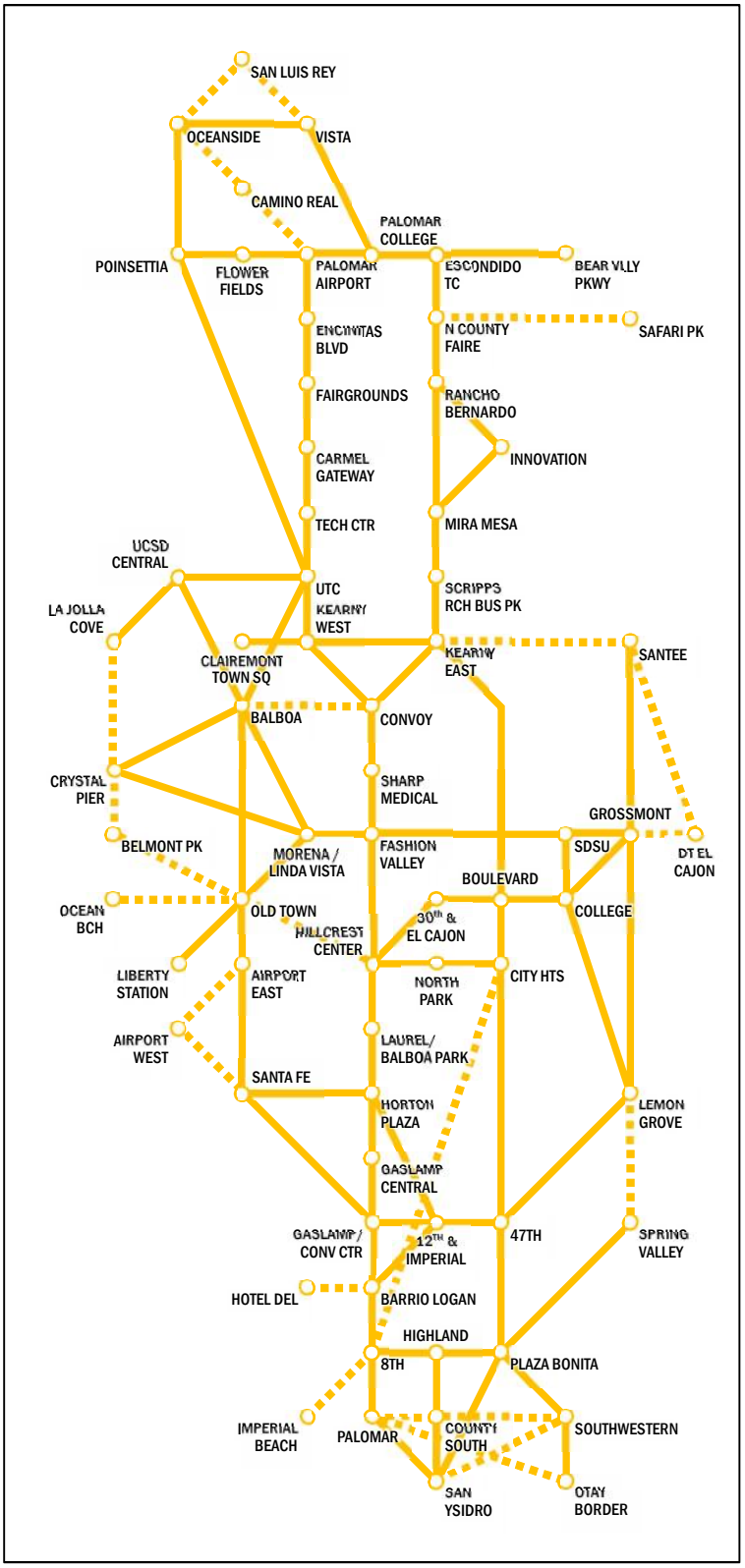


Figure 2.9

Express Overlay Network

This map depicts a likely set of "SuperStations" and other key destinations linked by an express transit system, the proposed "MetroXpress" network.

something of the scale of the region and the challenge of linking it together with transit.

It's Not the Plan, It's the Strategy

The Quickway Proposal had its origins in a question: what would it take for transit to be useful to a majority of San Diegans, meaning across income groups? An intensive amount of market research was conducted in this region during the 2000-2003 period exploring this question. We learned that "one size doesn't fit all," and that our current approach to measuring the effectiveness of different transit plans, while adequate for projecting ridership on smaller, incremental improvements to the existing system, would not tell us what we could accomplish with a significantly *different* set of options. Rather, market research consistently pointed to three key variables that, in addition to price, were behind most people's decision whether or not to use transit: Network Structure, System Performance, and Customer Experience.

...transit responds to the scale of the pedestrian, so it needs to be planned, modeled, and implemented at that scale.

Network Structure. A transit system is only as good as the connections it makes. Where are access points (stations) located? And how are they connected? When access points are conveniently located for both pedestrian (in urban zones) and automobile (in suburban zones) access, and people are dropped off convenient to their destinations, you attract more riders. When those connections are more direct, with fewer transfers and out-of-direction movement, you attract more riders. And even small improvements can yield big dividends; research by Cervero cited in Chapter 5 found that offices 300 feet from a rail station could be expected to generate *three times* the transit riders as a similar office building just 600 feet farther away. In other words, transit responds to the scale of the pedestrian, so it needs to be planned, modeled, and implemented at that scale.

System Performance. How long does the door-to-door journey take? And how much waiting is involved? The faster and more direct the transit system, the more people will use it. When frequencies are higher, you attract more riders. When transit is time-competitive with driving (or *superior*), you attract *many* more riders. Our goal should be to make transit time-competitive with driving, and *faster* during hours of peak congestion. Transit that useful attracts considerable numbers of people who would otherwise drive, and it also shapes choices of residential and employment location. If we get this right by directing transit investments to places where they can serve a maximum number of people, we will reap benefits long into the future. Get it wrong, and we will have to get used to the fact that it's going to take more time to get anywhere, and be more expensive, and the lack of parklands and people space in crowded areas will be felt.

Customer Experience. While the customer experience is made up of many tangible factors (station design, vehicle interiors, how one pays, system mapping, boarding, etc.), it ultimately boils down to an intangible factor: how do you feel about your decision to use transit after having used it? If you felt you made the right choice, then you are likely to ride again. If you feel like it was a mistake—took too long, didn't feel comfortable, or you felt powerless—then you're less likely to keep riding. But one of the most important aspects of the customer experience is the station experience: where and how you wait for transit. When people feel *protected*—protected from the elements, from moving vehicles, and from other people—you attract more riders. At the same time, people don't want to feel *isolated*, so station design must ensure that passengers are protected but still feel like they are participating in civic life, not shunted to the rear with the trash bins.

When *TransitCenter*, a New York-based organization focused on improving public transit, conducted its multi-city research on transit ridership (Figure 2.10), their findings largely dovetailed with what we learned in San Diego: the best strategy for

increasing ridership is to:

- focus on walkable, denser, mixed-use neighborhoods,
- design stations to better meet customer needs,
- significantly reduce door-to-door travel times, and
- reduce wait time.

Strategies for Transit Systems Development

San Diego's core strategy for developing a regional rapid transit network is built primarily around light rail, with arterial "Rapid Bus" and freeway-based "Rapid Bus" filling in the many gaps. Incremental expansion of the trolley network, now accompanied by incremental expansion of the "Rapid Bus" network, is the means by which the 2050 RTP transit plan is being implemented.

This strategy produces ongoing incremental improvements in the system, with major pieces like the Mid-Coast Light Rail Line making significant improvements. Compared to trying to get around the region today, the emergent system provides a backbone for a more reliable system and at-times modest, at-times significant travel time savings. Many people would rely on a combination of transit and rideshare services, saving money compared to the cost of owning a car. We would also see major developments adjacent to some Trolley stations.

One thing that the strategy doesn't do, though, is help us get to a time-competitive system. Most trips will still take significantly longer than driving, and too many urban centers will lack any real transit infrastructure. What's more, there's no obvious path by which to get from the 2050 transit network to a time-competitive one; it seems like it would require a complete new level of investment.

Another challenge with this strategy is that it often focuses resources in areas with little market demand (think of the Santee extension of the Trolley; one of the stations on this extension was named the worst performing rail transit station *in the entire state of California* in a 2015 study by the UC Berkeley Center for Law, Energy, and the Environment), or where infrastructure buys little in the way of travel time savings.

There's a bigger problem is this strategy: when it comes to rail, you can't lay some tracks here and some tracks there; tracks must all be connected.

An alternative strategy for rapid transit development was pioneered by the Brazilian city of Curitiba (as discussed earlier in this chapter), which went on to become the poster child of effective transit system development.

In many planning environments, Curitiba would be criticized for devising a plan it purportedly could not afford. Former mayor Jaime Lerner—the architect of the new strategy—responded by focusing on how to come as close as possible to the *functioning* of that ideal network, on the surface, using inexpensive components: buses (albeit, "bi-articulated" buses the length of a typical light rail car) and prefabricated "tube" sections, approximately 10 feet across and 5 feet wide, which could be used to fashion stations and other facilities (these tube sections are used elsewhere in Curitiba in addition to transit stations). By reserving right of way in their major boulevards for these "surface subway" lines, Curitiba was able to get its *network* up and running in relatively little time and achieve impressive ridership growth.

The Quickway Proposal adopts a similar approach. It asks, where can investments in transit infrastructure produce the greatest bang for the buck, or set up the kind of "modal shift" we seek in this region?

There are a number of things we'd need transit infrastructure to do if we want to really make transit that much more useful to the broadest possible market.

Figure 2.10
Research on Effective Transit
TransitCenter is a New York-based foundation that describes itself as "working to improve public transit and urban mobility across the U.S." Their study, "Who's On Board 2016" should be required reading for anyone interested in improving the effectiveness of transit systems (www.transitcenter.org).

1. Don't choke off the auto. The car is still the primary mechanism by which people traverse San Diego. It would be folly, let alone political suicide, to substantially degrade traffic and parking capacity in high-demand locations.

2. Let the Trolley "jump the tracks." Trolleys, of course, can't jump their tracks, but if they could, they could deliver people that last mile or two. What if the Trolley could actually reach the entrance of our many shopping malls? What if it could make the leap to office locations in Mission Valley, or travel up the hill to Hillcrest? While we can't do this with trains, we can do it with rubber-tired vehicles that leave an exclusive right-of-way and use existing arterials to make that last mile connection.

3. Make "Rapid Bus"…rapid. "Rapid Bus" is an improvement, time-wise and facilities-wise, over local service, but it's still not rapid transit and it forces transfers. What if "Rapid Buses" could enter trolley-like rights-of-way then proceed in express mode to major destinations? The resulting speed improvements could make a big difference in attracting new markets for transit.

4. Place infrastructure in places with strong market demand for housing. Places like Hillcrest and North Park are high-demand zones and command a price premium, but they also suffer from increasing traffic delays and parking shortfalls. If provisioned with the right set of transit and bicycle infrastructure and services, they could stay on top of their challenges.

The advantage of a staged approach to transit systems development is that it can provide major and significant benefits not just to a single corridor but to transit services branching out to multiple destinations.

Hillcrest and North Park can serve as an example. Under the RTP, someone wishing to travel from, say, 30th & El Cajon Boulevard to the Trolley at Fashion Valley by Rapid or Semi-rapid Transit would need to:

1. Hop the Trolley that will eventually be replacing the 215 "Rapid Bus."
2. Transfer at Park & University to a westbound "Rapid Bus."
3. Transfer at 5th & University to a northbound "Rapid Bus."

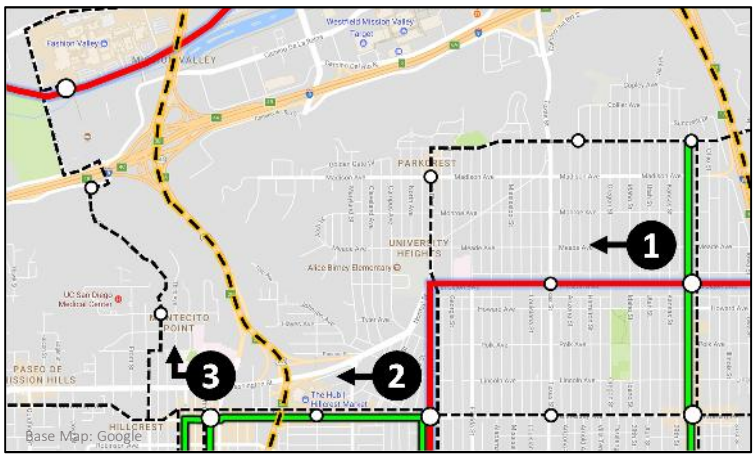
The trip requires two transfers and, if there's traffic, a relatively slow ride through Hillcrest and Mission Valley (Figure 2.11).

The Quickway Proposal suggests that the very first set of Quickway projects include the Uptown Quickway, a transit facility that operates in a tunnel in Hillcrest and then a combination of surface and elevated guideways to Fashion Valley.

This one piece of infrastructure can support not just a single route (like most of our trolley network outside of downtown), but multiple "Rapid Bus" (and even local bus) routes fanning out in multiple directions (Figure 2.12).

The "Uptown Quickway" avoids road congestion, multiple traffic signals, and lots of turning motions, resulting in significant travel time savings for every route using the facility. It also gives users a "world class" station experience for interfacing with transit, which contrasts sharply with waiting by the side of the road. Also, since multiple routes are expected to use the facility, it is likely that wait times for travel among stations would

Figure 2.11
RTP 2050: 30th & El Cajon to Fashion Valley
The nature of the network proposed in the RTP means that many trips will require excessive transfers and travel time. In this case, the trip would likely take *over half an hour* by rapid and "semi-rapid" transit.



be minimal; at peak hours, perhaps just 1-3 minutes.

In the previous example of a trip from 30th & El Cajon Boulevard to Fashion Valley (during the AM commute), that trip under the RTP 2050 plan may still take 31 minutes or longer, as follows:

1. Trolley or "Rapid Bus" from 30th & El Cajon to Park & University (8 minutes);
2. Transfer (assume 5 minutes at peak hours);
3. "Rapid Bus" to 5th & University (5 minutes, a 17% time improvement relative to today);
4. Transfer (assume 5 minutes); and
5. "Rapid Bus" to Fashion Valley (for the straight drive, Google Maps gives 7-12 minutes; under the best of conditions, "Rapid Bus" would be a minimum of 8 minutes, including stops at UCSD Hillcrest Hospital and Hotel Circle South).

In contrast, a new "Rapid Bus" route taking advantage of the Uptown Quickway would make the trip in about 17 minutes—a 45% reduction in travel time (Figure 2.13).

This scenario is just taking into account the Uptown Quickway. Once the El Cajon Boulevard Quickway is built, that travel time decreases even more, dropping to as little as 7 minutes (*less than ¼ the travel time* of the 2050 RTP plan).

Another example of the flexibility of Quickway infrastructure is Pacific Beach. SANDAG is currently exploring two options for providing service into Pacific Beach, both involving the Grand Avenue corridor: either a Trolley extension (continuing along Balboa Avenue into Kearny Mesa) or an aerial tramway, likely terminating by the Balboa Trolley station (under construction just *east* of I-5). In either case, passengers heading north or south would be required to make a transfer at Balboa; if their final destination was beyond walking distance of a station, they might have yet another transfer (or two) to make.

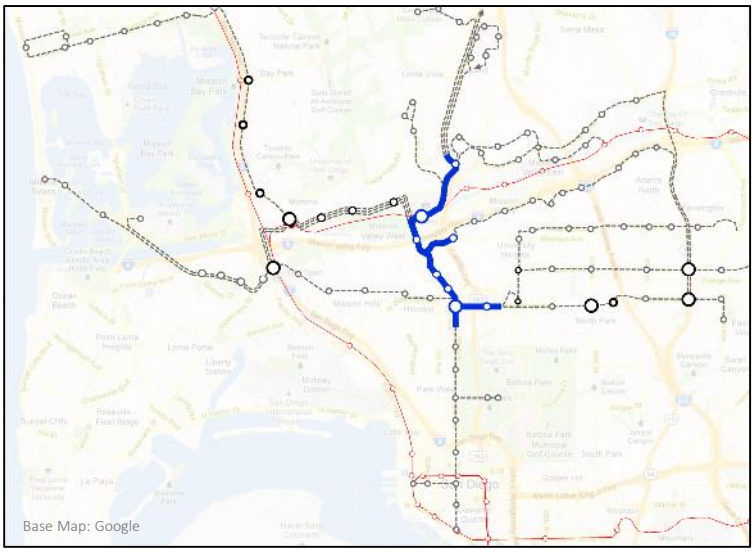


Figure 2.12
The Uptown Quickway
The Uptown Quickway is one of the first set of Quickway projects recommended for implementation. A large variety of routes would use this dedicated right-of-way, dramatically cutting significant time from many likely transit trips.

For example, someone traveling from the heart of Pacific Beach—say, Garnet Avenue by Cass Street—to the heart of North Park (30th & University Avenue) by Rapid or Semi-rapid transit in the RTP 2050 plan would have this journey:

1. Walk to the station (likely located on Grand Avenue by Mission Boulevard), at least 1400' or a 5.5 minute walk;

2. Take the Trolley or aerial tramway to the Balboa Station, about 6-9 minutes (assumes two stops and a top speed of 35 mph; aerial tramways, depending on technology, range from 19-28 mph top speed, so would be expected to be slower than light rail);

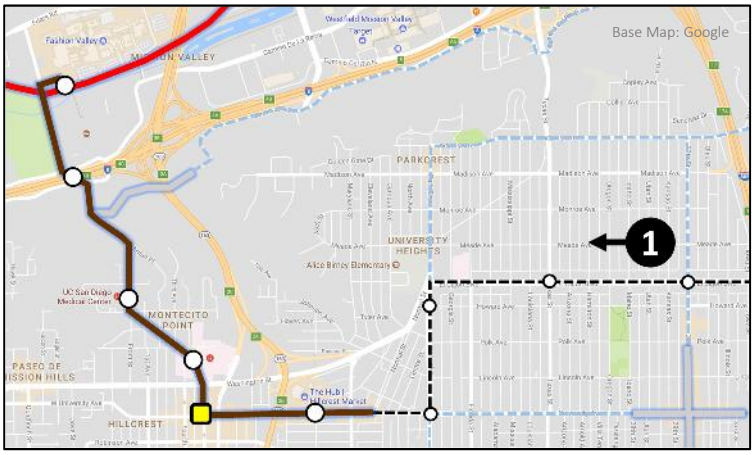


Figure 2.13
Quickway Phase I: 30th & El Cajon to Fashion Valley
A direct route provides the linkage.

3. Transfer at the Pacific Beach station (assume 3.75 minutes at peak hours) to a southbound Trolley, destination Washington Street, about 8.3 minutes travel time;

4. At Washington Street, transfer to a planned "Rapid Bus" route (assume 5 minutes transfer time, including the approximately 2 minute walk involved);

5. Ride the "Rapid Bus" to 30th & University, about a 21.9 minute ride (assuming a 19% in reduction in travel time from the existing local bus route on that corridor; this number may or may not be achievable).

The combination of direct routing to multiple destinations, significantly faster travel times with fewer transfers, and an improved station design suggests that the Quickway Proposal is likely to... generate significant new ridership.

All told, the journey, which today (for arrival by 6 pm) takes 63 minutes by local bus from the starting location, will become a 50 minute trip (44.5 minute trip plus the additional 5.5 minutes walking at the beginning), a reduction of 21%, which is *significant* but still *too slow*.

How would Quickway infrastructure improve on this journey? The innate flexibility of Quickways means that, instead of just supporting a single route that otherwise forced a transfer for most trips out of Pacific Beach, it is anticipated that Pacific Beach could generate enough ridership to support both a "Mainline" all-stops route (the Rose Line, named for Rose Creek, over which it passes) connecting through Fashion Valley to Hillcrest and North Park (linking these related urban communities together) and a set of MetroXpress routes serving UTC, Kearny Mesa, and Downtown San Diego (Figure 2.14).

The journey to the heart of North Park by transit—50 minutes in the RTP plan—becomes a 31 minute trip by the Rose Line in the Quickway Proposal (38% faster than the RTP and 51% faster than transit today); by MetroXpress routes (transferring either at Fashion Valley or Hillcrest Central), that trip becomes 27 minutes (46% quicker than the RTP, nearly half the time). The same drive, according to Google Maps, typically takes between 20-40 minutes for a 6 pm weekday arrival.

The combination of direct routing to multiple destinations (a major improvement in Network Structure), significantly faster travel times with fewer transfers (a major improvement in System Performance), and an improved station design (affording people greater protection from sun, wind, the occasional rain, and moving vehicles—a major improvement in the Customer Experience) means that the Quickway Proposal is likely to meet the needs of a much larger segment of the market, generate significant new ridership, and have a notably bigger beneficial impact on the region.

In summation, the Quickway Proposal proposes a very different approach to developing a regional rapid transit system. It contrasts with the current strategy of sinking major resources into a set of new light rail lines, then working with communities to allow for increased densities and building height around stations (frequently in locations that have not attracted major development), and run "Rapid Buses," some on freeways as express services, some on arterials, along a wide set of corridors. These services will be expensive to operate; therefore the region will need to seek some kind of additional taxing source to pay for it.

The Quickway Proposal instead began by identifying what a transit network would look like if it were optimized to connect places together more centrally and more directly. It then developed an infrastructure plan specifying what to build where in order to achieve performance goals and fall within budget. It suggested shifting the focus of transit system development to creating core infrastructure in urban communities that allows the "Rapid Bus" system to evolve into a MetroXpress regional express network. Investments are targeted at locations where significant performance boosts may be achieved. Urban centers

are prioritized for Quickway segments that cut travel time and boost reliability, along with world-class station facilities. The "network" nature of the system means that investments in one location may directly benefit many other locations as the benefits are distributed through the network.

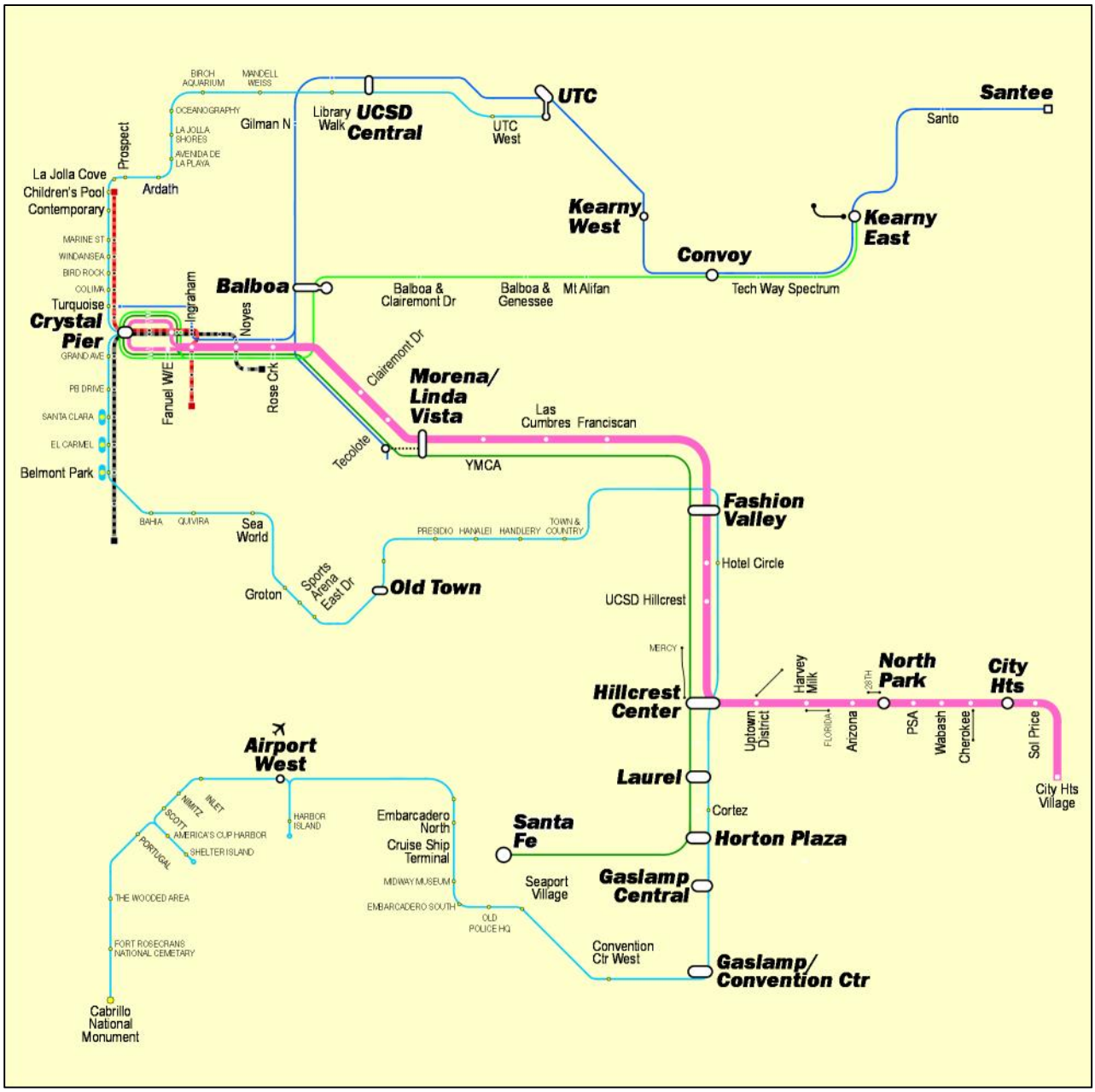


Figure 2.14

Quickway Routes Serving Pacific Beach

Routes shown directly serve Pacific Beach. The Rose Line is a "Mainline" or all-stops route connecting PB with City Heights via the Morena District, Mission Valley, Hillcrest, and North Park. MetroXpress routes provide quick linkages to UCSD/UTC, Kearny Mesa, and Downtown. The Fun'n'Sun Line, a tourism-oriented route, also serves Pacific Beach, albeit more slowly. The one-seat quick ride to multiple destinations promises to outperform the 2050 RTP plan.

3. Sails to Trails: The Structural Corridor

Between the sails of San Diego Bay and Mission Trails Regional Park lies San Diego's historic growth corridor (Figure 3.1). As modern San Diego spread beyond the "New Town" settlement of Alonzo Horton, it began to climb Bankers' Hill, then continue through Hillcrest to North Park, City Heights, and the College Area (once known more commonly as College Heights). El Cajon Boulevard evolved along the way from a local highway linking San Diego with East County communities into a major urban road, San Diego's "main street."

As growth pressures and the impacts of "urban sprawl" affected the region in the 1970s-80s, vast swaths of this corridor were intensively redeveloped, as single-family houses came down and thousands of "six pack" or "dumbbell" apartment buildings were built in their stead. Landscaped lawns were replaced by wide concrete parking aprons (Figure 3.2), while many businesses closed, facing stiff competition from new shopping centers in Mission Valley.

Today, this same corridor is again the subject of new growth, with several new

Figure 3.1
Sales to Trails Corridor
This is San Diego's historic growth corridor.

large-scale multi-family projects under construction, primarily in North Park but likely to expand to City Heights. This corridor, which may be called "Sails to Trails" (given how it runs from San Diego Bay to Mission Trails Regional Park) is the densest sustained zone in all of the region (Figure 3.3).

The lessons of the 1970s and 80s should not be forgotten as the region grapples with how to get on top of its continued population growth. Among these lessons are the following.

1. Growth without the right infrastructure to support it will generate bigger problems in the future.

Allowing much of the Sails to Trails corridor to be redeveloped in the 1970s-80s led to the production of more dwelling units but also had a range of negative consequences, ranging from impacts on single-family neighborhoods to parking issues (parking surveys conducted in this corridor found many streets with more parked cars than spaces for them, indicating cars parking illegally) to increased freeway traffic.

2. Concentrate densities around infrastructure.

Spreading density around may be more politically palatable than concentrating it—at least at first—but it generates worse impacts that long term threaten the region's viability.

In an effort to keep growth more "low key," much of the Sails to Trails corridor was redeveloped at just two stories, but over a very large land area. As a result, relatively few people lived with near access to transit or parks or other services that could ameliorate the consequences of density. (Figure 3.4). As a result, the auto is still the dominant movement system, forcing auto ownership on almost everyone and overloading the streets with parked cars (Figure 3.5).

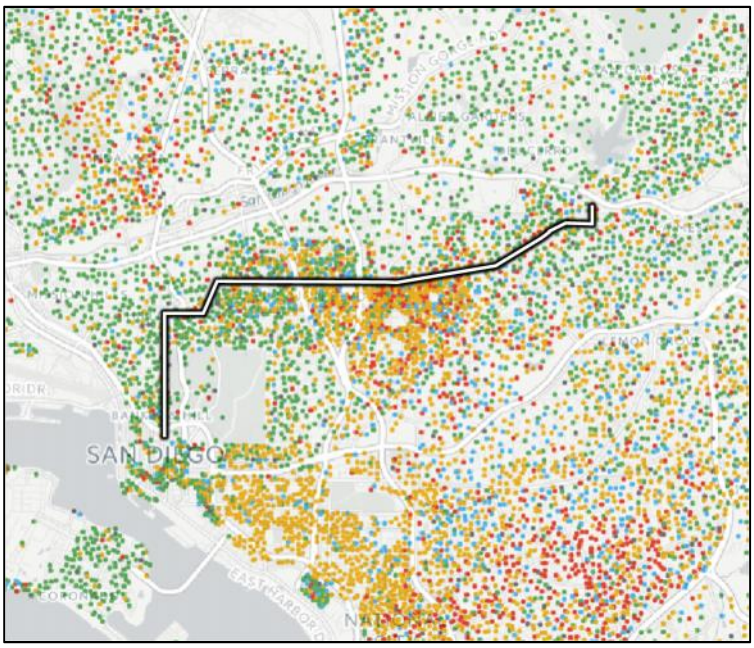
Figure 3.2
Wide Parking Aprons
For many, landscaping is part of what makes San Diego special. Buildings like this removed nearly all landscaping and replaced it with concrete for parking.

The parking and traffic impacts of new development (or redevelopment) have led people in many communities to oppose projects, further worsening our housing shortfall and driving up housing prices.

3. Begin with parks.

It has been said that people who live in private homes have less of a need for parks than those who live in multifamily housing. Yet widespread conversion of single family neighborhoods to multifamily neighborhoods was rarely accompanied by new parklands. As a result, the Sails to Trails corridor suffers from a noted lack of park space, with only a few new parks developed in the intervening decades (Trolley Barn Park in University Heights, Ward Canyon Park in Normal Heights and

Figure 3.3
Population Density of Sails to Trails Corridor
Sails to Trails is San Diego's largest concentration of people.



Base map by CartoDB, OpenStreetMap. Data: US Census Bureau, socialexplorer.com

Figure 3.4
Mid-City: Dispersed Density
Much of the Sails to Trails corridor was redeveloped in the 1970s and 80s, replacing single family homes with cheap "six-pack" and similar apartment buildings. The development patterns was still auto-oriented, with inadequate parklands, public space, and transit.

Teralta Park in City Heights are all helpful and welcome by their communities).

4. Expect the unexpected.

At the time houses were being torn down for new apartment buildings, the idea was that the new 1- and 2-bedroom apartments being built would serve as "entry level" housing for young people. Instead, whole families ended up being pushed into these units; in some cases, immigrant families may have two or more families sharing a single apartment. It would be safe to say that anything we build might be used differently in the future than anticipated at the time of planning or construction.

Continued growth in the Sails to Trails corridor is inevitable, especially as many of the cheap apartment buildings are nearing or have reached the end of their economically viable life and will require major renewal. That, and the new market demand generated by Millennials looking to live closer in will ensure a ready market for any new housing built in Sails to Trails.

Figure 3.5
Neighborhood Parking
Due to the lack of viable, competitive, and convenient transit options, residents of the Sails to Trails corridor are more likely to be auto-dependent than not. Parked cars often block sidewalks.

What happens to this corridor under present plans? In addition to new development, the area is slated for bicycle and transit improvements. However, a closer inspection of both sets of plans leads to big questions about their efficacy and ability to meet needs. The shortcomings of the transit plans have been discussed at length in prior chapters and the appendices, as well as the two previous documents in the Paradise Project series (*Preserving Paradise* and *Moving About Paradise*), as have issues with at least some of the bicycle infrastructure being built. Current plans that call for the development of partial bike lanes on Meade Avenue are also problematic; though there can be little doubt local planners have tried to do the best they can within the confines of what they were assigned, it's still true that the results do not bode well for future utility.

Sails to Trails can be outfitted to support the new growth and development that is anticipated, but doing so will also make the corridor even more attractive, especially to Millennials. Still, this is a better problem to have than one that tries to tinker at the edges without creating the infrastructure necessary to accommodate growth, let alone current demand.

The Quickway Proposal anticipates major investment in the Sails to Trails corridor (Figure 3.6), but so does the current

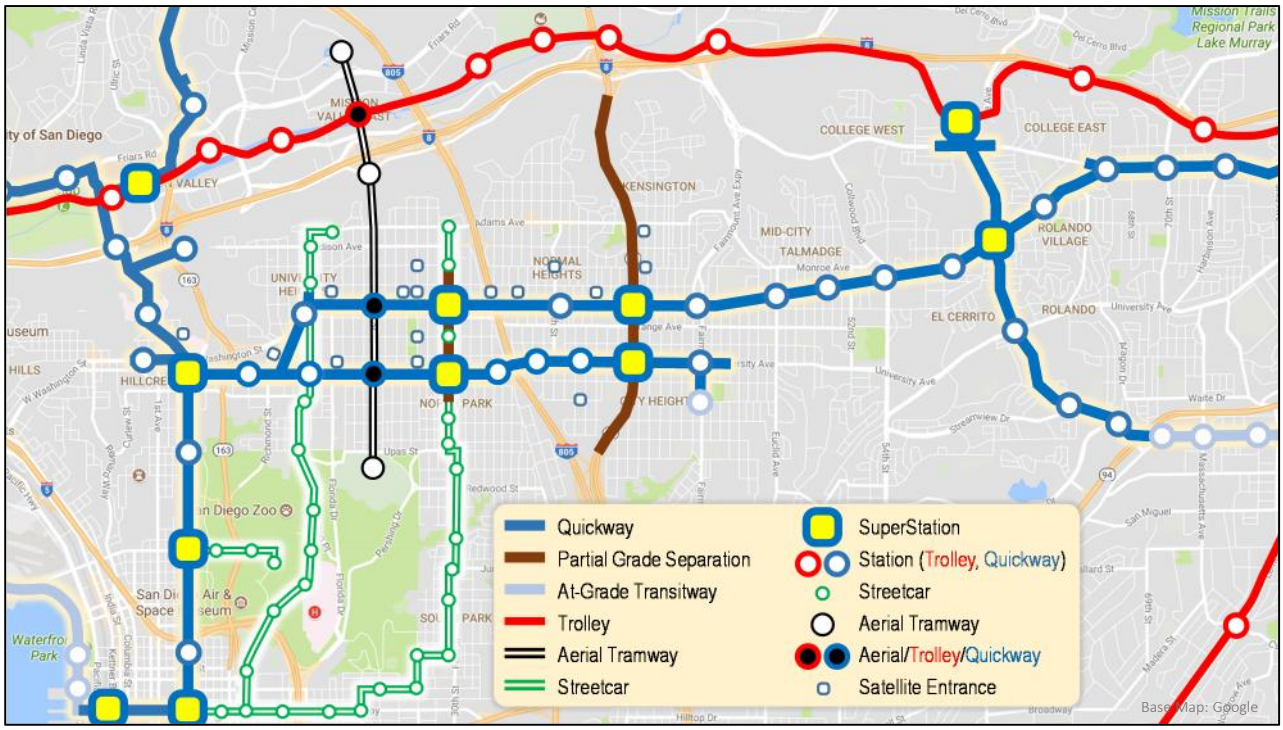


Figure 3.6
Transit Infrastructure Proposed for the Sails to Trails Corridor
Alignments and station locations are approximate. Off-Quickway routes and their stations are not depicted.

Regional Transportation Plan. It is worth noting, though, that infrastructure investments in established communities are not the same as investments along freeway or rail corridors, and the benefits can far exceed those of investments elsewhere. In the case of Sails to Trails, investment in the right kind of transit infrastructure and services—the kind designed to offer larger numbers of residents quicker access to more destinations—may be expected to generate an outsized market response, compared to "green field" development elsewhere. How may this response be anticipated, and how should it be managed so as to maximize public benefit and minimize public costs?

This is the crux: development and change is coming to the Sails to Trails corridor again, with or without any change in plans. The question is, how can this development be better planned and accommodated? And if smarter infrastructure leads to an even greater market response—which is likely—we will need to ensure that our plans are up to both the challenge and the opportunity.

The Right Infrastructure for Sails to Trails

The basic strategy behind the Quickway Proposal is the strategy suggested by UC Berkeley professor Robert Cervero in his study of effective transit systems worldwide, *The Transit Metropolis*, cited earlier in this paper (Figure 3.7). For cities like San Diego, the burden is on the transit system to best serve the city *as it is today*. The better transit does at serving the city, the more it will shape future land use decisions. Cities where the transit system did an especially good job of getting people around, attracted a lot of development around transit investments. As a result, their growth generated fewer auto trips and less congestion and air quality impacts than cities with less convenient transit systems. Many of these cities also used this growth to create new civic space, parklands, and bicycle infrastructure, adding immeasurably to quality of life and regional competitiveness.

Given the residential densities found in the Sails to Trails corridor (Uptown, especially Banker's Hill and Hillcrest; Greater North Park; and Mid-City Communities like

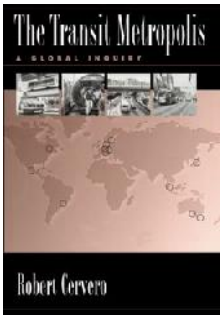


Figure 3.7
The Transit Metropolis
UC Berkeley professor Robert Cervero's study explores the relationship between transit and land use.

Normal Heights and City Heights), it is only natural to focus resources for a major investment in this corridor. SANDAG, for example, anticipates the development of a light rail line to serve this zone, replacing the current route 215 "Rapid Bus." The Quickway Proposal recommends a grade-separated Quickway in this corridor, for the simple reason that people will be accessing multiple destinations, and a Quickway infrastructure is far more flexible in allowing for multiple routes to multiple destinations—something cost-prohibitive to do with light rail (this is illustrated clearly in Figure 2.11 in the preceding chapter). It's a pragmatic approach to creating a transit network that is time-competitive with driving for a large set of trips, particularly during peak commute times, and being able to cost-effectively meet market demand without generating excessive operating costs. Quickways also allow us to put stations closer together (bringing access closer to more people) without sacrificing travel time, since MetroXpress routes skip most intervening stations.

So if Quickway infrastructure is definitely warranted in this corridor, the question as to how to produce it leads to three alternatives: at surface, elevated, or below grade (tunnel).

Figure 3.8
Elevated Quickway, Xiamen, China
Elevated transit can work in many places, but when done on urban roads, it tends to cause many negative impacts on the surface.

Surface is always the cheapest, but with so many street and pedestrian crossings, it would be hard for a high volume service to achieve high speeds (the route 215 "Rapid Bus" achieves only modest speed gains over its parallel local route): bus lanes would certainly improve that by a marginal amount, though the Orange Line busway in Los Angeles demonstrates that even a dedicated right-of-way is limited in the time benefits it can produce; if the frequency of buses is too high for signal priority systems to work properly (they tend to max out at about a bus every 5 minutes or so), then buses are subject to significant traffic signal delays (which typically account for about 1/3 of travel time). An inbound trip from the Canoga station—a 13.4 mile trip—takes about 38 minutes during the AM commute, according to Google Maps; if the facility were grade-separated, travel time on an all-stops route would drop to 25 minutes, and an express route making three intervening stops would take just 20 minutes—a time savings just short of half.

Surface busways also take up *space*. While high volumes would certainly justify that, there may be even higher and better uses of urban public land at the heart of a community.

Elevated guideways free *some* space on the surface, but they cast shadows (Figure 3.8), require space for columns, and may raise privacy and noise concerns (Singapore has an elevated transit line whose windows dim automatically when passing close to residential windows). There are places in San Diego where elevated transit makes sense, but not here.

The third option, undergrounding, is far and away the most costly option. Yet it is the option best-suited for the long-term growth of this corridor. The warrant for undergrounding the corridor comes down to three factors:

Volumes. Transit vehicle and passenger volumes are expected to far exceed the effective carrying capacity of surface treatments. For example, modeling conducted on the Quickway Proposal using 2006 population and travel data showed that a Quickway beneath El Cajon Boulevard would actually move volumes of people equivalent to or greater than that carried by the Boulevard itself; between Louisiana and Texas Streets, the City of San Diego counted 22,905 cars/day on the Boulevard in February of 2012; for that stretch, ridership on the Quickway (using just 2006 population and trip data) at that screenline was projected at greater than 30,000 passengers. Farther east, the stretch between I-805 and 33rd Street carried 27,829 cars in March of 2013; the Quickway was projected to carry over 26,000 passengers. Add in population growth and redevelopment, and those numbers would be expected to increase dramatically, possibly even doubling. To carry even 30,000 trips a day would require at least a bus every 3 minutes at the peak hour, generating a warrant for grade separation.

Speed. Given the role of the El Cajon Boulevard Quickway in carrying not just locally-generated riders but MetroXpress routes converging from East County communities, speed will be vitally important to meeting the needs of riders traveling longer distances. Grade separation is the only means of providing the travel speeds that can be reasonably competitive with driving.

Conflicts. Wide as the El Cajon Boulevard corridor is, it would be hard-pressed to carry the traffic that is to be expected with future infill development (let alone current traffic), while also providing safe and effective bicycle infrastructure and high-speed rapid transit.

It is expensive to build Quickways underground, but there are only a few places in the region that warrant extensive undergrounding (portions of the South Bay qualify, as do short stretches in other communities). Still, it is encouraging that, even with this major expense, the total capital budget for the Quickway Proposal was well below that of the SANDAG RTP plan (costs are reported in detail in the Quickway Proposal project document). The shifting of resources to communities pays dividends.

Another factor tipping in favor of undergrounding transit along this corridor is the need to renew water and sewer infrastructure, which will involve considerable digging. If digging is involved, it makes more sense to bundle the projects and take advantage of cross-funding to generate matching dollars (this was discussed in greater detail at the end of Chapter 1 of this paper).

If we place real, optimized transit infra-structure along our largest dense urban corridor, we have to understand two things: if we are able to achieve the travel time goals and connect people to enough of their destinations, we will see a *lot* of ridership. And if we do, expect developers to completely redevelop the corridor.

Given that a smart transit investment is likely to lead to major redevelopment, it makes sense to think of the Sails to Trails as a *structural corridor*. If we create transit that is that useful, we can expect a lot of growth around access to that system. The following chapters describe how we can prepare for and take advantage of that possibility through a smart set of transit investments (the Mid-Coast Supportive Projects) and an integrated approach to planning transit, road, parking, bicycling, parks, public space, and related infrastructure in the western half of the corridor. The eastern half of Sails to Trails has its own unique challenges as well as opportunities, but will need to be addressed in future planning work.

4. Phase I: Uptown 2025 & the Mid-Coast Supportive Projects

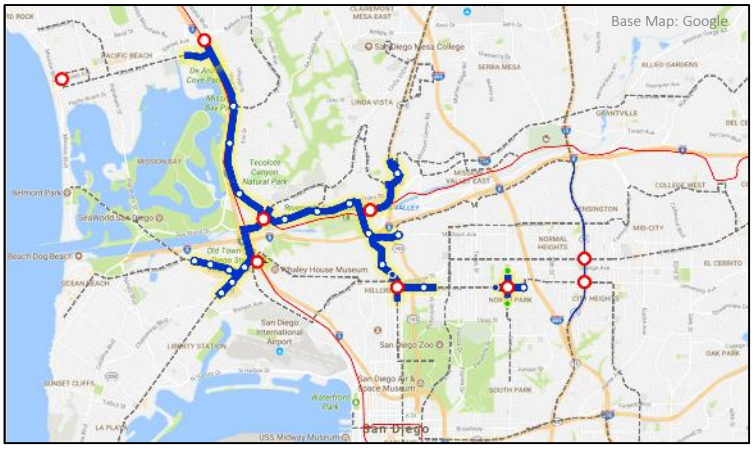
In *Preserving Paradise*, the first document in the Paradise Project series, the Mid-Coast Supportive Projects were introduced as the first set of Quickway Projects recommended for implementation (Figure 4.1). These projects are intended to connect with the Trolley and extend the reach of true rapid transit service to include communities and destinations that are otherwise not served by our light rail system. As reported in *Preserving Paradise*, the benefits of this are many:

Trolley. Connections to the Trolley are significantly improved; AM commute travel time from the Fashion Valley Trolley Station is cut by more than half to Balboa Park, Mesa College, Linda Vista, and the Sharp Hospital complex, and by a third or more to Hillcrest and North Park. Many more people will be able to take the Trolley and then transfer to Quickway-based serve to get to their jobs.

Communities. Connections within the region's core are significantly improved. For example, morning commute trips to Hillcrest from all origins examined (including UTC, Pacific Beach, Mission Beach, Ocean Beach, Linda Vista, USD, North Park, Fashion Valley, Mesa College, Sports Arena, Balboa Park, Liberty Station, Bay Park, the Sharp Hospital complex, and the Boulevard Transit Station in Mid-City) were cut an average of 46%. This is a very sharp decrease to a major job center and regional destination.

Golden Triangle. Connections to the UTC area are significantly improved. On average, the Mid-Coast Supportive Projects reduce transit travel time to UTC an additional 10% on top of the new Trolley line, helping boost ridership on the Trolley.

Figure 4.1
Mid-Coast Supportive Projects
A set of Quickways and related infrastructure, along with both mainline (depicted) and arterial stations (not depicted), together create an infrastructure that can support a set of *true* Rapid Bus routes.



The Mid-Coast Supportive Projects are described in detail in *Preserving Paradise* (Chapter 7, "Evolving a Quickway Network," and Appendix C, "Mid-Coast Supportive Projects Project Profiles") and recapped in Appendix C of the current book. Though these projects are in far-flung locations, one of them, the Uptown Quickway, is located partially within the Sails to Trails corridor. The others are relevant in that they create the transit infrastructure that would allow many residents of the western half of the Sails to Trails corridor to reach a large number of notable destinations in travel times competitive with driving, and produce benefits to residents of the eastern half as well, as well as anyone traveling around the region's core urban zones.

The Uptown Quickway is a central piece of infrastructure. It connects many of the region's core urban zones and links them with points north and west. Routes traveling through here will serve much of the region. It provides crucial connectivity to the Trolley. Even when first built, and long before the rest of the system is

operating, it will serve a large number of routes connecting many locations rapidly (Figure 2.11).

The Mid-Coast Supportive Projects are not just good for the Mid-Coast Trolley or the other Trolley Lines; they work with all current transit infrastructure to ensure that the investments proposed for the Sails to Trails corridor will pay off. If the only connections improved were to downtown, there would be good benefit, but if connections are improved to many more likely destinations, then the usefulness and attractive power of the transit system is amplified, magnifying return on investment. It is the "turn to the north" at Hillcrest that opens the floodgates to connectivity and new transit riders.

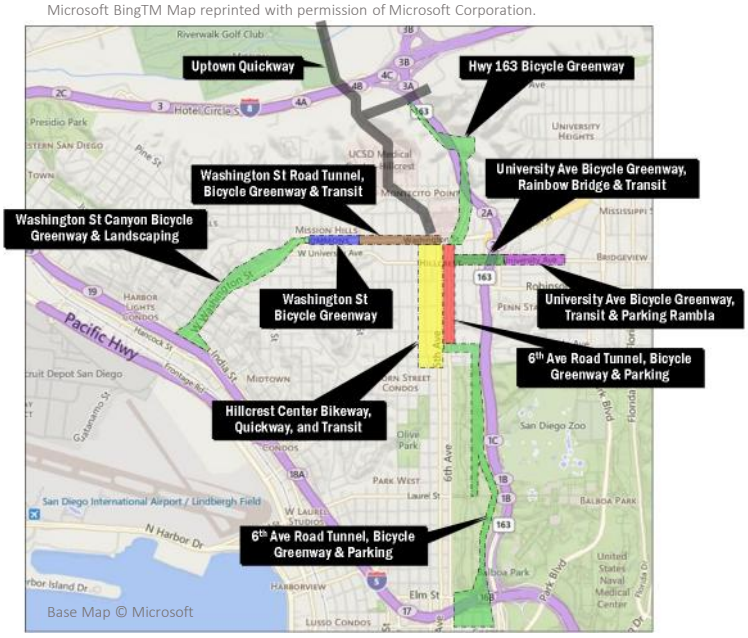


Figure 4.2
Uptown 2025 Projects
The Uptown 2025 Proposal consists of a balanced and integrated set of road, parking, transit, landscaping, and bicycle infra-structure projects, all optimized to provide real solutions to the problems facing Uptown.

Uptown 2025

The Uptown 2025 Proposal began with a question: what would a world-class bicycle system look like for Uptown? That quickly evolved into a deeper question: what would a world-class bicycle system look like for Uptown, if at the same time we looked at transit, roads, and parking? That is, if we also developed world-class transit, addressed key traffic issues, and sought to ensure an adequate parking supply?

These weren't "feel good" questions; they were practical. With all of the different changes planned for Uptown, conflicts were bound to occur; a bike lane might conflict with a plan for a streetcar, for example. Or a new water main might block the logical place for a road tunnel. If the right set of infrastructure projects could be conceived together, they could be built so as to facilitate and support, not block, each other. If two different tunnels might need to cross, the one being built first can be designed so that the second can be built with little or no disruption to the first. This kind of systems thinking is the essence of good planning.

As it evolved, Uptown 2025 developed a set of elements (Figure 4.2), which were described in Chapter 7 of *Preserving Paradise*:

Transit. At the core of Uptown 2025 is the Uptown Quickway, beginning just south of Hillcrest Center and terminating by Fashion Valley, with underground stations serving Hillcrest Center, the Mercy Hospital complex, and the UCSD/Hillcrest Hospital complex, and above ground stations serving Hotel Circles North and South (a station floating over I-8) and the western end of Camino del Rio South. It is then complemented by the Fashion Valley SuperStation and the Friars/163 Flyover (with a station in the Friars Mission complex), dramatically shortening travel time to Linda Vista, Mesa College, the Sharp Hospital complex, the Friars Mission Center, Civita, Kearny Mesa, and the I-15 corridor north.

Spurs branch off from the central alignment; one heads east along University Avenue, another links to Washington Street, and a third bridges 163 to meet Camino del Rio South.

A chief benefit of the Uptown Quickway is that it requires no new transit services in order to begin operations (Figure 4.3); existing bus routes, rerouted through the Quickway, see significant reductions in travel times and will likely as a result see corresponding gains in ridership. However, several new "Rapid Bus" routes become viable, too (Figure 2.12, Chapter 2).

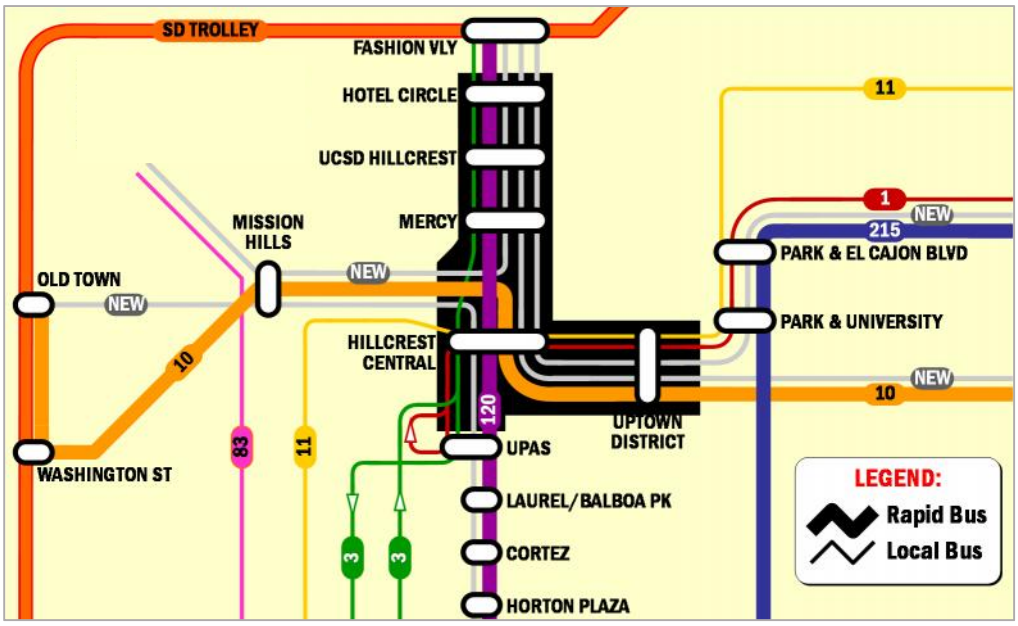


Figure 4.3
First Routes Using Quickway
From the beginning, several existing bus routes would use at least part of the proposed Uptown Quickway: Routes 1, 3, 10, 11, and 120. In addition, several new routes are candidates for implementation on opening day.

South of Hillcrest, little infrastructure from the Quickway Proposal is necessary to support expected levels of service, short of transit lanes downtown, until likely after the completion of the Sails to Trails Quickway projects.

Roads. Two key traffic chokepoints were identified in Uptown: Sixth Avenue entering Hillcrest from Highway 163 southbound, and Washington Street, where eastbound PM commute traffic can back up from Sixth Avenue all the way beyond Goldfinch. University Avenue was also a noted congestion zone, with knots by Goldfinch and from Hillcrest Center east to Florida Street.

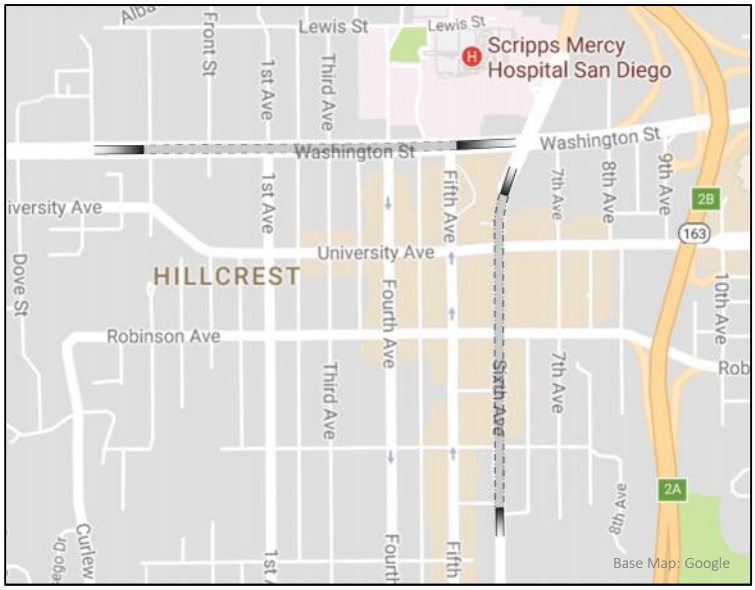


Figure 4.4
Proposed Road Tunnels
The Uptown 2025 Proposal consists of a balanced and integrated set of road, parking, transit, and bicycle infrastructure projects, all optimized to provide real solutions to the problems facing Uptown.

Two road tunnels were proposed to ease traffic flows (Figure 4.4). One would take through traffic on 6th Avenue from Highway 163 beneath University, Robinson, and Pennsylvania Avenues. In this way, traffic to/from Park West would no longer need to drive on the surface through the center of Hillcrest, and the surface of 6th Avenue could be reprogrammed for other uses (more on this below). A second tunnel opens on Washington Street by Brant Street and continues east on Washington until just before the bridge over 6th Avenue. This tunnel would alleviate immense pressure on the 4th/5th intersections. The Washington Street tunnel also does double duty as a spur from the Uptown Quickway, which crosses below the road tunnel; transit lanes rise up to join the road tunnel and serve an underground station by Albatross; buses merge (with priority) into the general traffic lanes just before exiting the tunnel.

Why build additional roadway infrastructure, especially if the goal driving much thinking about the future is to try to "encourage" people to not drive? The answer is simple: Uptown is continuing to grow. Even if a large number of existing trips and trips from new development are

shifted away from cars, driving will still play a major role in the movement system. For many people, driving will remain their only realistic option for at least some of their trips. And by providing the capacity below grade, it frees up room on the surface for more important uses, like bicycling, walkways, trees… and parking.

Parking. Hillcrest's commercial center is clearly parking impacted; studies going back years have demonstrated demand exceeding supply (Figure 4.5). Given Hillcrest's role as a *regional* draw, and also given the hilly nature of many surrounding residential neighborhoods, driving will continue to remain an important means by which people access this urban node.

Uptown 2025 was designed to produce a slight gain in parking in central Hillcrest, quite unlike current plans which will eliminate significant on-street parking in order to create bike lanes. Uptown 2025 sought to avoid this tradeoff, and largely succeeded. On Washington Street, which is a candidate for a median bikeway flanked by parking (Figure 4.6), even with the new bikeway, parking is only reduced by about 5% (6 spaces). On Sixth Avenue, above the proposed road tunnel, through-lanes are reduced to one in each direction, which

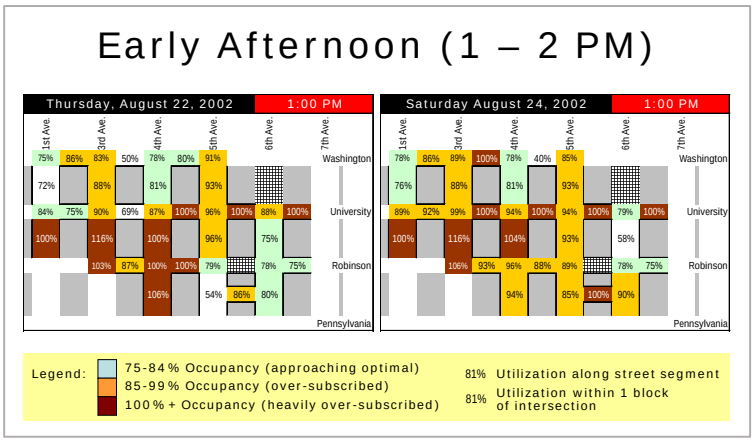


Figure 4.5
Parking Utilization in Hillcrest Center
As far back as 2002, parking studies conducted on behalf of the Uptown Parking District found that many blocks had more cars parked on-street than legal spaces available, even in mid-day post-lunch.

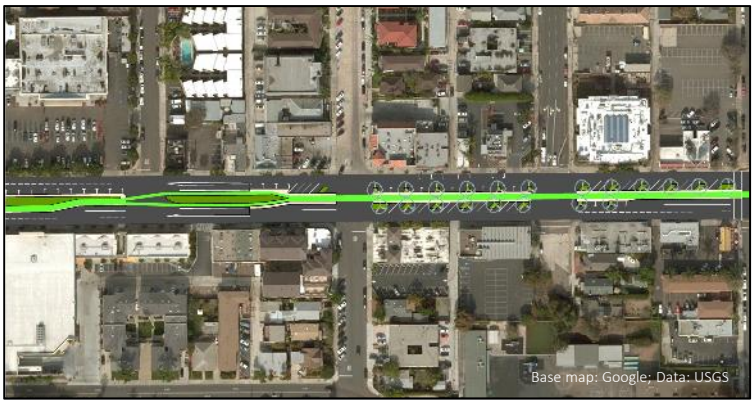


Figure 4.6
Proposed Median Parking & Bikeway for Washington St.
The proposed road tunnel would make this configuration possible.

Figures 4.7 (top) and 4.8 (bottom)
Proposed Median Parking and Bikeway, 6th Ave.
Either configuration adds parking to compensate for any parking losses due to bicycle infrastructure development.

Figure 4.9
Amsterdam Bike Lane on Street
In narrower places, separated bike lanes may be placed on the street for short distances, generally where cars have no reason to cross the bicycle path.

opens up the wide road to two possible configurations: a "Parking Rambla" (Figure 4.7, reproduced from *Preserving Paradise*), which would add up to 27 parking spaces on the block between University and Robinson; or a bikeway flanked by parallel parking (Figure 4.8), which still adds 10 parking spaces to that block; in both configurations, the block to the south also gains significant new parking.

Bicycling. Uptown 2025 began as an exercise in rethinking the role and function of the bicycle in Uptown. One thing that stood out was the need to provide equally for those passing through Uptown as for those traveling within it or to/from it. This led to the development of a *Greenway* concept for Uptown.

Greenways

The notion of Greenways began with a realization: our best option for creating a great urban core is to do it right. It needs to be centered on parks and people space, served with world class transit and station facilities, offer a great walking environment, and feature "community squares" or similar civic spaces that serve as "community living rooms" that are fully integrated with rapid transit stations. These town squares are typically ringed with retail (including restaurants, brew pubs, coffeehouses, and various services), sometimes on two or more floors, and some office uses may be attracted. In some respects, they are to future residents what mall food courts were and in some cases still are to some: community gathering places.

Figure 4.10
Amsterdam Separated Bike Lanes
Bikeways (darker bands within sidewalks) in Amsterdam are largely separated from traffic and are interconnected into a mostly coherent whole.

Transit is grade separated in many densely urban areas, allowing for a regional express network that makes it relatively quick to travel among key places in the region, with additional access to many more places. Done right, transit becomes a convenient and comfortable means of getting around.

Bicycles, too, must have optimized infrastructure. The experience of Amsterdam seems especially relevant as they've figured out how to create a pervasive, connected, distinct, and relatively safe set of urban bikeways. Though *occasionally* operating in bike lanes on a narrow road (Figure 4.9), they mostly travel in their own "roadway" adjacent to the sidewalk (Figure 4.10). It's not in the street, but is distinguished from the sidewalk by a small curb and a change in materials and color. You know if you've stepped onto a bikeway.

The miracle of Amsterdam's bikeways is how they flow into each other, often seamlessly. They make it possible to get around the city relatively quickly and safely.

Amsterdam-style bikeways make a lot of sense for places like Mid-City San Diego. But for longer distance commutes, they might be too stressful and slow for some. So we also need to think in terms of a regional *greenway* system: bicycle corridors that connect major destinations

to the rest of the region. To the extent it's possible, they should essentially *function* as "freeways" for bikes (Figures 4.11 and 4.12), though they look just like friendly roadways exclusively for bikes, perhaps 16' at their widest, surrounded in many places by a strip of parkland or otherwise through a landscaped corridor (Figures 4.13 and 4.14). We landscape freeway corridors; how much more important is a landscape approach to a greenway, so that its narrow strip is optimized to permit long-distance biking with relatively few conflicts. Bicyclists work for their distance; a pleasant environment is encouraging and stimulating and is likely to help contribute to modal shift goals.

Another particularly innovative and applicable approach to bikeway planning has emerged in Denmark, which now embeds LEDs in bikeways that turn green when a steady 12 mph will take you through green lights; that is, as a pulse of green lights travels down the bikeway, any bicycles traveling within the green light pulse will hit green lights at traffic signals. And yet, it looks like an ordinary bikeway (Figure 4.15).

If we create a greenway network that is designed to permit a "green flow," that alone would be a spectacular achievement; the notion that it might be possible to get from North Park to Downtown on a dedicated bikeway with a "green flow" making that trip non-stop, just like a freeway, is unthinkable today. And if the relatively narrow bikeway was attractively landscaped with greenery and

Figure 4.11
Australian Bicycle Greenway
This particular greenway has an adjacent pedestrian path. Current best practices would provide a greater degree of separation.

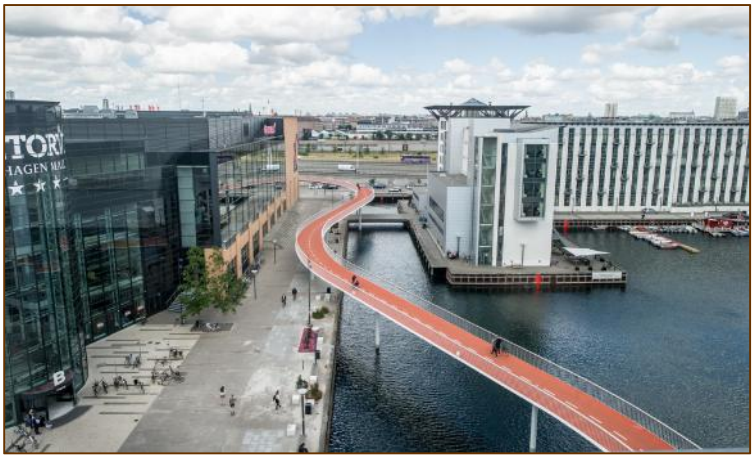


Figure 4.12
New Bicycle Bridge, Copenhagen
The "Bicycle Snake" connects Copenhagen over a river. Over 40% of central Copenhagen's residents commute by bicycling.

Figures 4.13 (L) and 4.14 (R)
Bicycle Greenways
Global cities have begun developing true bicycle infrastructure. These examples are found in Bogota, Colombia (L) and Sao Paolo, Brazil (R).

Figure 4.15
"Green Wave," Copenhagen
Embedded LEDs turn green when a bicyclist at that point will reach a green light while maintaining a steady 12 mph. Cyclists in this way can flow into the city center in the AM and back out to residential neighborhoods in the PM, in some cases without needing to stop. This level of convenience pushes many people to choose to bicycle to work.

well integrated in terms of urban design, it would attract both development and a lot of new bicycle commuters and riders. With a green flow loop or two in Downtown, and well-located bicycle storage centers, it would be easy to raise bicycling's share of trips by a large amount. And if it was designed to never exceed a 3% sustained grade, even as it reached from Uptown into Middletown and into Mission Valley and over to University Heights and North Park, it would be usable by families and many seniors.

With such an infrastructure—which in the scale of transportation projects, is extremely modest in cost, and would certainly attract significant private investment—San Diego would have the backbone for an extended regional system.

Types of Greenways. Two kinds of Greenways are anticipated for San Diego: "Max3" Greenways and "Max2" Greenways (Figure 4.16).

Max3 Greenways are designed with a maximum 3% sustained grade (short rises may exceed 3%); Max2 Greenways are limited to a 2% sustained grade. The difference, though seemingly small, is real. For example, the straight-line distance between the Hillcrest Community Sign and Hotel Circle South by Bachman Drive is 5000' (.95 miles) and a 270' elevation difference; a 3% grade would require 9000' (about 1.75 miles) to climb or descend 270' vertical; a 2% grade would take 13,500' (over 2.5 miles).

Figure 4.16
Max2 and Max3 Greenways
Greenways are defined by their maximum sustained slope; given San Diego's topographic relief, Max3 Greenways are far easier to build, but long-range, the region needs to consider how to create Max2 Greenways so as to maximize bicycle ridership.

The Greenways anticipated for short-term development in San Diego are Max3 Greenways, but these should be planned together with a future Max2 network so as to avoid a situation where the Max3 Greenways or other infrastructure inadvertently blocks the likely path of Max2 Greenways.

Two "Max3" Greenways would serve the Sails to Trails corridor; they are at the core of the Uptown 2025 Proposal.

The Marston Greenway (named for George Marston, an early champion of greening San Diego)**,** running north/south connecting downtown directly with Mission Valley, from where it could be extended to Kearny Mesa and UTC. Built to the standard of not exceeding a 3% sustained grade, this facility would open up large areas to easy and safe bicycle access.

There are a number of different approaches to linking from Hillcrest Center to Downtown. While bicycle lanes are currently provided on the 4th/5th couplet, these roads exceed steepness standards and the bike lanes have many conflicts, raising bicyclist stress levels and the possibility of accidents. They're certainly useful for people who live alongside or who wish to patronize the businesses on these streets, but they're not candidates for Greenways. Sixth Avenue alongside the Park is a possibility, though it might cut auto lanes or reduce parking; south of Laurel, the bikeway would need to deal with the steep grades, most likely through some form of elevated structure. The two most promising corridors are within Balboa Park itself. One "colonizes" a portion of Balboa Park Drive to Inspiration Point, then cross over to Cortez Hill on a joint pedestrian/bicycle bridge, then "zigzags" over the freeway (so as to maintain a 3% grade) to Third Avenue, continuing south. A different branch could follow the freeway partially to the southeast, then run into the East Village.

The second promising candidate is built into Balboa Park on the west side of 163. If done sensitively so as to minimize

intrusion and use WPA design cues, lit only to a soft, even glow at night, and accompanied by a landscaping program to restore that canyon slope, it can be a tremendous asset to the community while giving to bicyclists what we give motorists on the adjacent freeway: the experience of traveling through a wooded park. It leaves the 163 corridor just north of Upas and cuts over to 6th Avenue to University then continues north on a structure, paralleling 163 again (with a bike spiral to help maintain a 3% grade), meeting up with the Uptown Quickway spur over 163, then built-in alongside the Quickway to the Friars Mission Center via Fashion Valley.

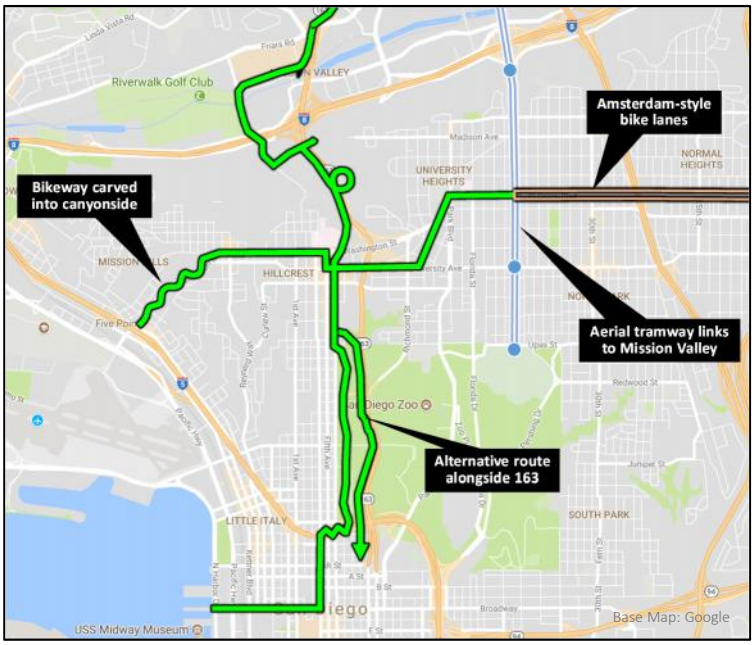
With a Max3 Greenway designed in this manner, it would be possible for someone living in the new Civita development in Mission Valley to bicycle to a job downtown without exceeding a 3% sustained grade and needing to come to a stop perhaps 2-3 times. This level of convenience far exceeds anything in current bicycle plans, and is likely to lead to a massive uptake of bicycle commuting.

The Washington/University Heights Greenway crosses E/W, starting at Middletown, following the alignment recommended in the Uptown 2025 Proposal. It goes through Hillcrest, over the Rainbow Bridge (Figure 4.17) and following the Quickway alignment to Texas Street, the main interface with the Mid City Amsterdam network (and a potential aerial tramway link back to Mission Valley as depicted in Chapter 5). So somebody could use the Amsterdam network to get to the Greenway, then ride with relatively few impediments and at easy grades to access Downtown, Hillcrest, Balboa Park, Mission Hills, Five Points, Fashion Valley, Hotel Circle, Camino del Rio South, the Friars Mission complex, the new Civita development, and Mission Valley Center, with future extensions to Liberty Station, Midway, Old Town, and PB. And if built on a "green flow" system, a cyclist could travel those distances with few if any stops.

Figure 4.17
Proposed Bicycle "Rainbow Bridge"
This bridge carries the proposed Greenway over Highway 163 and University Avenue.

Together, the Greenway system (Figure 4.18) and the Mid-Coast Supportive Projects—particularly the Uptown Quickway—are the key to unlocking the Sails to Trails corridor. With excellent and easy transit and bicycle connections to many surrounding destinations, these modest investments can transform the nature of market demand in San Diego. They set the stage for North Park and the western portion of Mid-City. What infrastructure would allow residents of these zones to best take advantage of the new Greenways and Quickways?

Figure 4.18
Proposed Uptown "Max3" Greenway Network
A Greenway network is designed to support longer-distance bike journeys.



5. Phase II: North Park & Western Mid-City

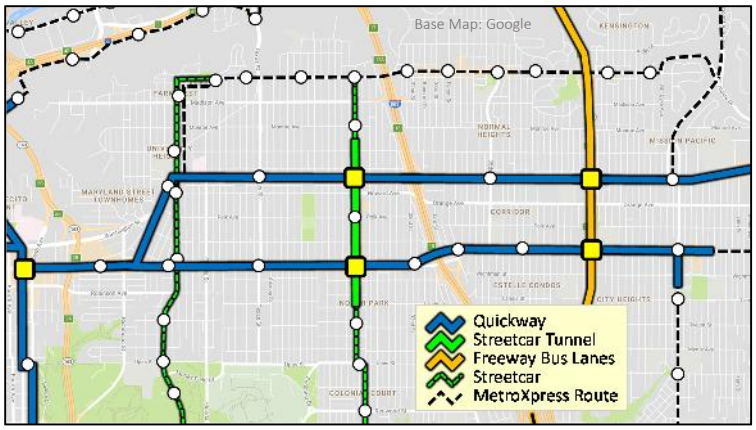
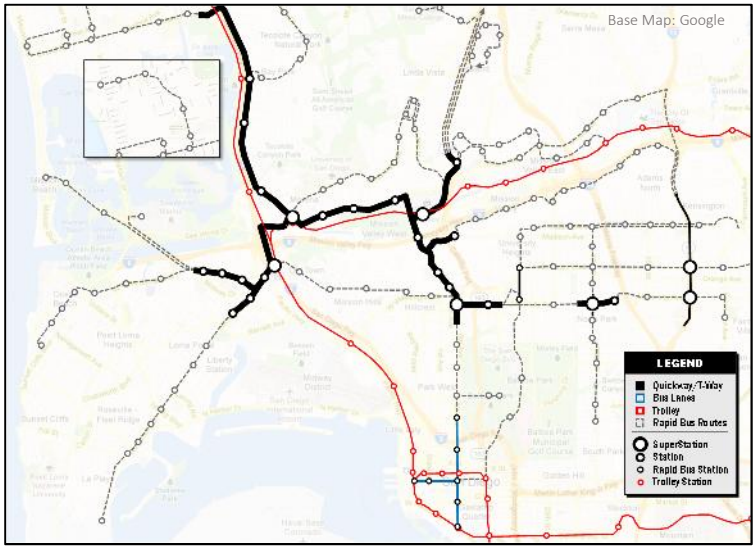


Figure 5.1
Quickway Concept for Sails to Trails
Quickways are intended to support significant passenger volumes.

Figure 5.2
Phase I Quickway Development
An initial investment in Quickway infrastructure supports multiple routes.

The Sails to trails corridor is seeing significant new investment as Millennials rediscover the city and housing prices escalate. The right transit infrastructure and services can accelerate investment. How do we take advantage of the *value* created by Quickway infrastructure to channel new development, help solve other problems, and create additional amenity?



1. Build Quickway infrastructure in the heart of the zone.

If there is any place in the region that is ready for a major investment in transit infrastructure and services, it is the Sails to Trails Corridor. The combination of residential densities, mix of uses, and location relative to employment sites make this corridor the one most in need of a *significantly* enhanced transit system.

Figure 5.1 depicts the proposed Quickway infrastructure for North Park and western Mid-City. Quickways run the length of El Cajon Boulevard, connecting to the Uptown Quickway by Normal Street. A Quickway branch on University Avenue reaches at least over the I-805, with another section warranted to the east of I-15; the segment of University Avenue between Wabash and I-15 will require additional study to determine the most cost-efficient means of ensuring transit speed and reliability consistent with expected flows. Supplementing these Quickways is a short tunnel segment on 30th Street for use by streetcars.

2. Use the infrastructure to support a set of local and express services that connect residents of the Sails to Trails corridor with likely destinations at a competitive travel time.

Figure 5.2 depicts the service plan of rapid and semi-rapid transit services following construction of the first set of Quickway projects, the Mid-Coast Supportive Projects. Once Quickway infrastructure is extended east, and other linkages added elsewhere, the service plan evolves to take advantage of passenger flows and time savings to produce multiple routes headed to multiple destinations (Figure 5.3).

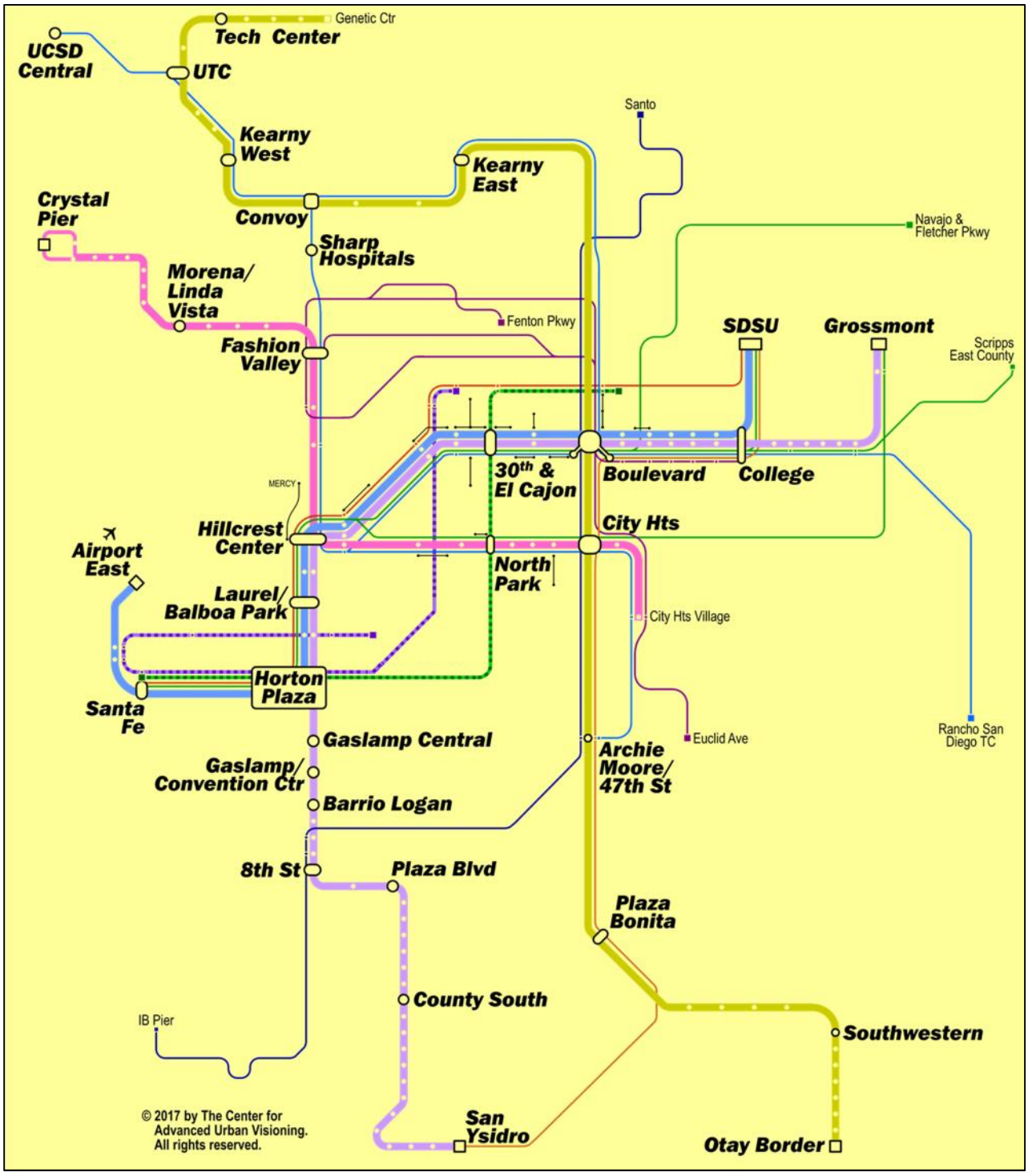


Figure 5.3

Direct Routes from North Park and Western Mid-City

Based on the current iteration of the Quickway Proposal Service Plan, four Mainline routes (the Gold, Violet, Rose, and Sky Lines), 12 MetroXpress routes, and 2 streetcar lines all serve North Park / Western Mid-City.

This service plan is notable. In contrast to the RTP 2050 transit plan, the Quickway Proposal serves the Sails to Trails corridor with multiple express and branching services, giving residents a "one-seat ride" to many locations throughout the region, including the border, the South Bay waterfront employment zone, beach

communities, most destinations in Mission Valley, extensive connections to Kearny Mesa, the Golden Triangle, and Sorrento Mesa, and many points in East County, let alone bringing people from throughout the region to the destinations of the corridor. Travel times to most of these locations are slashed and become competitive with driving. The service plan turns the auto into a *choice*, not a *requirement*, for many residents.

Ridership modeling of the service plan, using a generic model (that did not measure several relevant details that would be expected to push ridership even higher) and 2006 population and trip data still showed passenger flows along the corridor *five times greater* than passenger flows on the Trolley in Mission Valley that year and *20% higher* than the Blue Line Trolley in the South Bay, the busiest Trolley line in the system. By 2050, the Sails to Trails corridor could be expected to produce double that ridership or more, given shifting attitudes toward transit and new residential development.

3. Create station-area "Community Squares" around Quickway stations.

Community Squares aren't just a nice idea; they're integral to creating a viable cityscape around transit. These plazas are ringed by relevant retail, including eateries, brew pubs, boutique shops, and a range of other services; they are pleasant places to be in; and they anchor related services such as bicycle parking, showers (for bike riders), and both City and County services. They are excellent locations for public facilities such as libraries, too.

Station-area Community Squares are proposed for several locations: Ed Center, Texas Street, 30th & El Cajon, North Park, and 35th Street. Plazas may vary in size depending on a range of criteria. Examples of such plazas are depicted in Figure 5.4.

It should be noted that while these are just conceptual explorations, there are very real people who live, work, or own in locations that are recommended here for new public space. Their needs and concerns are valid, and those who may face large-scale impacts should not only be compensated fully for any loss and assisted in other ways to minimize further dislocation, but should have some opportunity for sharing in the wealth created by the public investment for which they had to shoulder an unusual private impact.

John Nolen Plaza at the University Heights Community Square. This Community Square, with an adjacent park, could be configured in a number of different ways. The eastern branch of the Washington/University Heights Greenway may run through the edge of the park/plaza, avoiding most pedestrian and vehicle conflicts.

Texas Plaza. The Texas Community Square is unusual in that it is proposed as a multi-level structure mostly floating over the existing roadways. The intersection beneath may be restructured to improve auto flows, especially on Texas Street, and ground-level retail should remain unaffected.

Texas Plaza serves a number of potential uses, necessitating the larger size:

Senior Garden. A surface plaza, the south side of which would be programmed to serve the needs of seniors in the community. This plaza may be tied into the new senior housing being built immediately adjacent to the Garden.

Family Plaza, a tot lot/playground, on the north side of the plaza.

Parking. The Texas Plaza could contain one or two levels of parking, some of it for Neighborhood Electric Vehicles (NEVs) and similar small vehicles, other spaces for full-size automobiles. A "satellite shuttle" connects this plaza with the "Great Park" discussed later in this chapter.

Bicycle Center. A bike center may be located either in this Square or in the plaza by the Ed Center Station.

Aerial Tramway Station. A further and somewhat tantalizing prospect for Texas Plaza is a linkage connecting this plaza with Mission Valley. While this could begin with a dedicated shuttle, it could be replaced by an aerial tramway (Figure 5.5). In either case, the prime purpose would be to transport bicyclists and pedestrians between North Park and Mission Valley, given the limited opportunities to create the bicycle connection by a bikeway that adheres to global standards. The potential routing of such a tramway is depicted in Figure 5.6.

Mithun | Stephanie Bower, Architectural Illustration

Image courtesy of Goody Clancy. Used by permission.

Source: Jersey City Development Agency

Source: Dover, Kohl & Partners

Figure 5.4
Community Squares
Community Squares, town squares, or "plazas" are open areas for people. They often contain a mix of pavement and landscaping, water features, seating areas, shade trees, and potentially other amenities. They help define a place. When located in densely populated areas, people often walk to these squares for the retail and entertainment options offered.

Figure 5.5
"Metrocable" Aerial Tramway, Medellin
Aerial tramways can be a cost-effective means of traversing steep slopes. In this Colombian example, two intervening stations are visible before the gondolas reach the terminus at a metro station, upper right.

Figure 5.6
Texas Street "Ron Roberts Aerial Tramway"
The problem of getting bicycles between Greater North Park and Mission Valley may be solved with an aerial tramway, linking people and bicycles with the Camino del Rio South employment zone, the Trolley at Rio Vista West, and the new Civita development to the north. This aerial tramway is named for County Supervisor Ron Roberts, who has championed the application of aerial tramways to transit problems in San Diego.

Figure 5.7
Microvehicles
Smaller vehicles such as "Smart Cars" may be parked more efficiently than larger cars. In addition to fitting into less space, parking structures may be built with significantly shorter spans between columns, further reducing costs.

4. Build at least some parking into some of these Community Squares.

Residents of neighborhoods between 1/4-1 mile or so of these stations may choose to drive to access the system, and the parking can also support the local retail. Parking at these urban stations should favor smaller "Neighborhood Electric Vehicles," or NEVs, which may be parked in as little as 1/3 the gross space required for parking "regular" cars (Figure 5.7), reducing costs considerably.

5. Pursue strategies to extend the reach of stations.

Stations—especially underground—are expensive to build. How can their value be enhanced? By extending their reach.

The reach of a station is normally measured by distance. Research published by UC Berkeley transportation expert Robert Cervero examined the use of rail transit for commuting in California; what he found was that, for the residential end of a trip, the percent of people who chose transit decreased steadily as one moved away from a station; at ¼ mile distance, only half as many people chose transit compared to people living by stations. At ½ mile, the stations attracted only residual ridership. At the destination end of that commute, however, distance mattered even more. Only 1/3 as many riders came from locations just 1/6 mile from the station (250 yards, less than 3 typical blocks) as from offices just 100 yards away; beyond ¼ mile, relatively few people were willing to walk (Figure 5.8). These findings are mirrored in many Latin American BRT systems, which place their stations every 500 meters, about 1/3 mile, meaning no point along the corridor served is more than a 1/6 mile (a 3-minute walk) from a station.

To put this in perspective, these findings suggest an important strategic point: the tighter the integration between transit stations and employment sites, the greater the ridership. So strategies and designs that bring transit access and employers

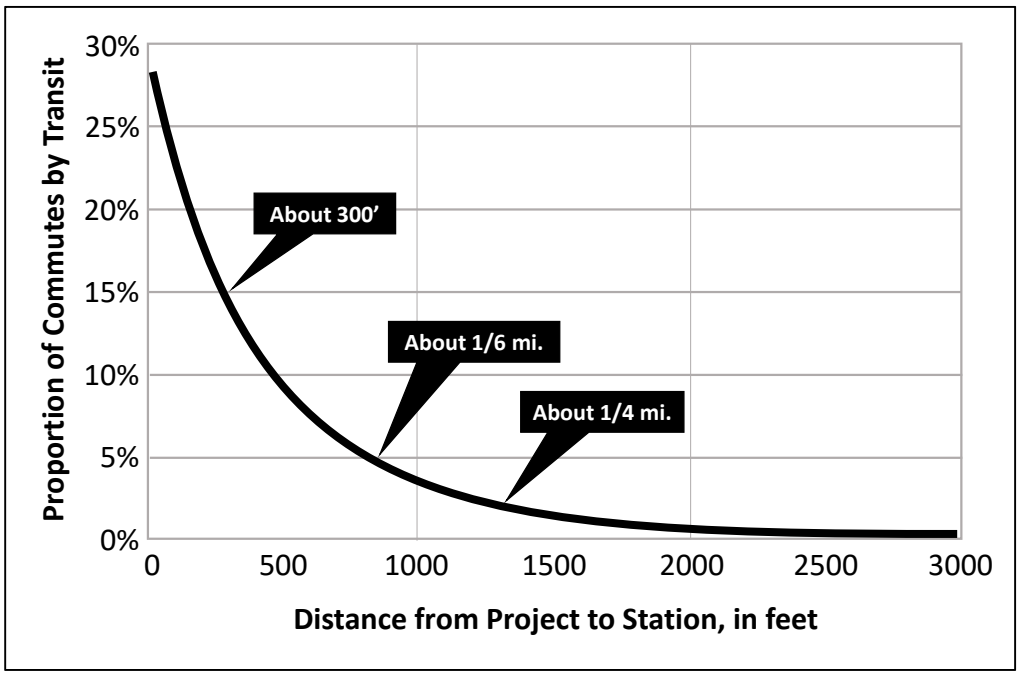


Figure 5.8
Ridership Gradient: Transit Share as a Function of Distance of Office Site to Nearest Station
This research establishes the importance of planning a tighter integration between transit and employment and reflecting this in our regional transit ridership modeling. Adapted from Robert Cervero, "Office Development, Rail Transit, and Commuting Choices," *Journal of Public Transportation*, Vol. 9, No. 5, 2006.

closer together will pay long-term dividends in the form of increased ridership (and less traffic). The difference between just a 300' walk and an 880' walk, in Cervero's research, was the difference between a 15% market share and a 5% market share, the shorter distance generating three times the ridership. Our planning and ridership modeling needs to measure with these distances.

What this also means is that a station by itself can *effectively* capture residents from the surrounding 0.2 square miles (a radius of ¼ mile), about 128 acres. Can this be extended?

Feeder buses and trains do exactly this, but they do it imperfectly. Even if they operate at a 10 minute frequency—very high by local standards—a location just ½ mile from the station could be as much as 12.5 minutes away by transit (longer than walking for many people): up to a 10-minute wait, followed by a 2.5 minute trip (assuming typical urban bus through-speeds of 12 mph). If the land area immediately surrounding a station could be tied into the station, the reach of that station could be significantly enhanced.

It turns out there's a model for accomplishing this. Anyone who's taken a metro (subway) from a deep station has probably ridden an escalator or elevator to do so; in some cases, this escalator ride can easily take 1-2 minutes. In essence, the escalator (or nearby elevator) is a transit link of its own connecting a surface location with a deep station (Figure 5.9).

Satellite entrances are a means of connecting adjacent areas to a mainline station cost-effectively, by deploying super-high frequency automated shuttles

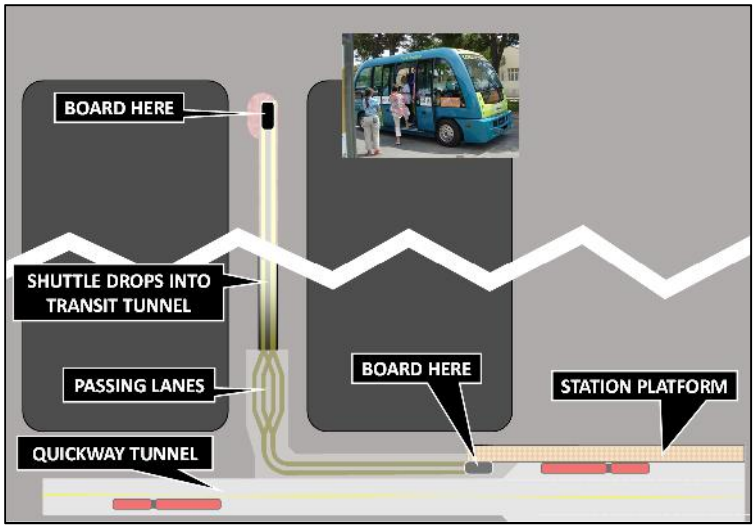
Figure 5.9
"Satellite Entrance"
This escalator is actually a transit trip of about 90 seconds between a subway station and what is, in essence, a "satellite" entrance. Simple automated shuttles replace the escalators in the Quickway Proposal, allowing us to place station entrances even ¼ mile away—vastly extending access to the major investment that is a station—and still get people to the station within a 2-3 minute window.

Figure 5.10
Automated Shuttle
Small, automated, self-guided shuttles are now comercially available. They can bring large land areas within direct access of a station.

Figure 5.11
Tramway Station, Denver International Airport
The user experience associated with many airport tramways is not unlike what to expect from "satellite stations."

Figure 5.12
Tramway Station, Las Vegas

Figure 5.13
Satellite Station Concept
Using small, self-guided, autonomous vehicles *already on the market*, satellite stations can extend the reach of a major Quickway station.



(Figure 5.10) that only travel back and forth between the station and the satellite entrance, much like a horizontal elevator or inclined plane. It is relatively simple to configure such satellites so that those arriving always have a vehicle awaiting them and that the maximum time from arrival at the satellite entrance to arrival inside the mainline station be no more than 2-3 minutes. In this sense, satellite stations may also be compared with airport gate facilities that are reached by shuttles (Figures 5.11 and 5.12).

In some cases, satellite shuttles can use the Quickway and then pull into a small station facility; in other cases, the shuttles may run on the surface in their own dedicated right-of-way (a single lane with a passing facility in the middle) (Figure 5.13).

Satellite stations allow us to solve a major issue with rapid transit: station spacing. Traditional Rapid Transit lines typically space stations 1/2 to 1 mile apart; for example, the 215 "Rapid Bus" on El Cajon Boulevard stops on average every 0.6375 miles between College Avenue and Park & University. The problem with serving closer stations is that it slows the transit down considerably. A route that could achieve a 30 mph through-speed with stations spaced every mile (taking 20 minutes to travel 10 miles) would be reduced to just 18 mph, taking an additional 14 minutes of travel time, if stations were spaced 3 to a mile like in Latin American BRT systems.

Bogota got around this problem by overlaying a large set of express routes that each stop at different groups of stations, based on ongoing passenger surveys of origins and destinations. The problem with this approach is that it can be confusing to end users and be extremely difficult to map.

Satellite stations help solve this problem by extending the reach of a station, allowing stations to be pushed farther apart or by allowing those who otherwise are beyond a comfortable walk of a station to now take advantage of the transit.

If we focus on the Quickway component of Sails to Trails between Hillcrest and and Fairmount Avenue, a number of opportunities may be identified for satellite entrances (Figure 5.14). Together, these satellites extend the reach of rapid transit stations on the corridor by an extensive amount (Figure 5.15).

6. Divert surface traffic.

This might sound like a minor afterthought, but it's a serious issue, the resolution of which generates a surprising opportunity.

In order to conduct a large digging operation—and this will need to happen at some point anyway to renew water and sewer mains—it will be necessary to close off all but one through lane in each direction on El Cajon Blvd. While even a single lane can move at least half of current traffic, what can we do with the remaining traffic?

The solution is to shift through-traffic to the parallel roadways: Meade Avenue on the north side, and Howard/Orange Avenues on the south side (Figure 5.16). Such a shift, though, has big impacts on residents, but can be configured to minimize those impacts. Then, too, these streets are expected to carry significantly more traffic even in the RTP; the issue is not whether these streets will carry more traffic, the issue is *how*.

There are three steps involved in shifting some traffic to parallel roads:

Smooth the streets. Get rid of dips and repave where necessary.

Signalize intersections for one-way "smooth flows." Time the signals so that traffic flows at a neighborhood-appropriate speed without needing to stop.

Configure diverters at either end. Traffic entering El Cajon Boulevard from either end will need to be diverted to the parallel roads. At the Fairmount Avenue end, this

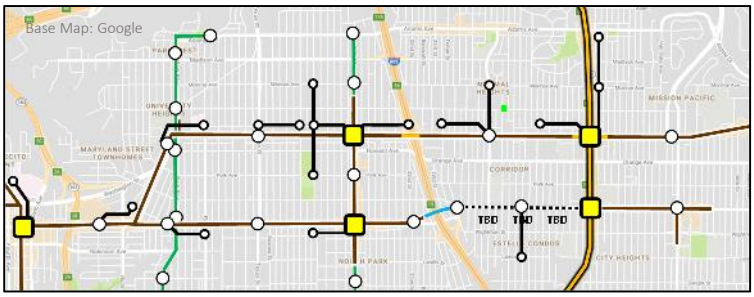


Figure 5.14
Quickway Stations, Satellite Entrances
Satellite entrances extend the reach of *rapid* transit.

can be done mostly with restriping of the existing roadways (Figure 5.17). At the Normal Avenue end, the situation is complicated in both directions: westbound, there is a bottleneck along Park Boulevard (between Meade Avenue and El Cajon Boulevard), which itself carries two-way traffic into University Heights and the Adams Avenue corridor; eastbound, there is no direct connection from Normal Street to Howard Avenue.

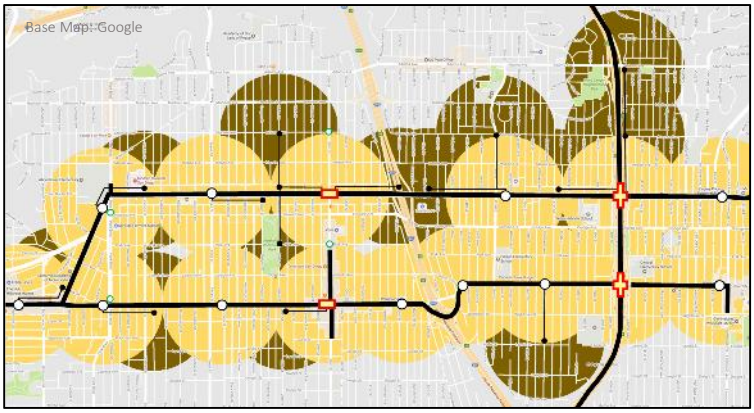


Figure 5.15
Area Coverage
Areas within ¼ mile radius of a Quickway station are indicated by lighter circles; darker circles show those areas within ¼ mile radius of a satellite entrance. Satellite stations in this case nearly double the land area served by Quickway stations along El Cajon Boulevard.

The solution (Figure 5.18) is expensive, but necessary to managing impacts and a part of the overall project budget: take advantage of the elevation shift between Florida and Georgia Street to run westbound traffic into an approximately 1200 foot tunnel segment, emerging on Normal Street in front of the Ed Center. Eastbound, the solution involves opening a roadway through an existing gas station, which will require at least a reconfiguration of that facility.

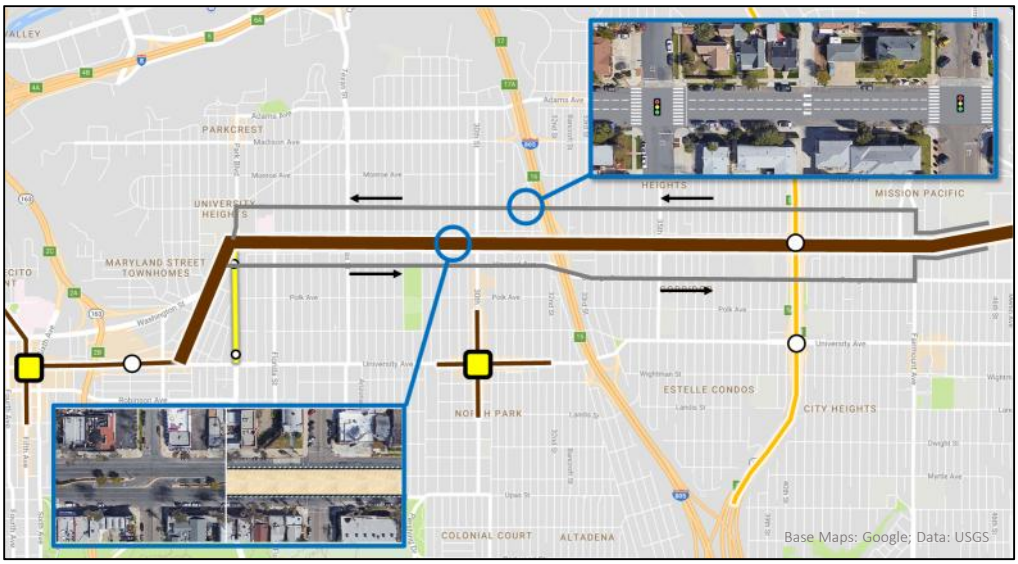


Figure 5.16
Shifting Partial Traffic off the Boulevard
Preparing parallel roads to reduce traffic conflicts and delays will help the community balance the needs of residents and those driving through.

Once diverted, though, traffic flows are actually improved. The use of timed signals means that traffic should be able to move at relatively modest speeds (~25 mph) but with few if any stops along the route; effective through speeds rival that of ostensibly faster "expressways" that require stopping at intersections. The combination of signal timing and removal of conflicting left turns also means up to a 30% bump in carrying capacity compared to the same lanes on a 2-way road.

7. Create a linear park.

Once traffic is diverted, construction may begin on the new infrastructure. But if that construction involves digging (Figure 5.19), it also means rebuilding the surface afterwards. The question is, should the surface be restored to what exists today, or is there a higher and better use of that land?

Figure 5.17
Fairmount Avenue Diverter
It would be relatively inexpensive to divert traffic by Fairmount Avenue.

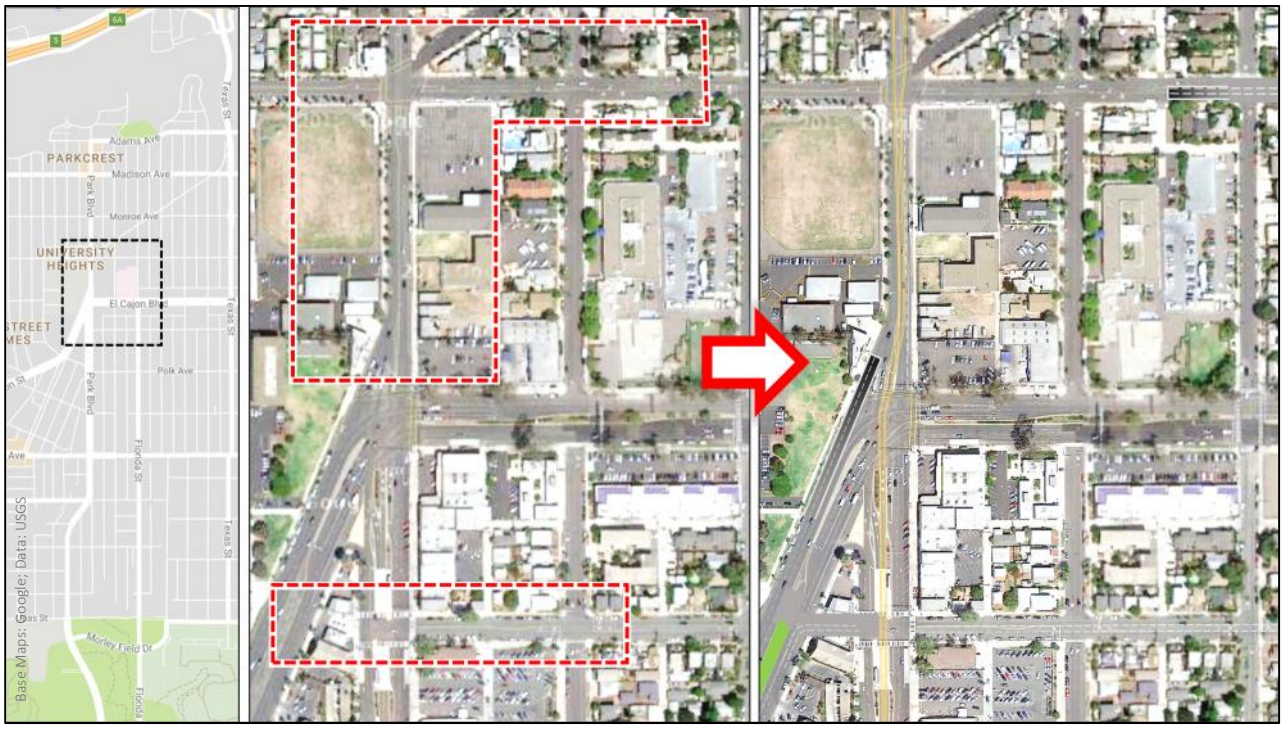


Figure 5.18
University Heights Diverter
This is the more complicated of the two diverters, but it makes everything else work.

If traffic is effectively diverted, and if that diversion actually improves both traffic flows and carrying capacity, then it may not be necessary to restore travel lanes to El Cajon Boulevard itself. Rather, why not replace the surface with a linear park (Figure 5.19)?

So was born the notion of the Balboa Parkway, a linear extension of Balboa Park. San Diego historically grew up around Balboa Park; why not continue to grow around an *extension* of that park?

The Balboa Parkway "colonizes" the middle of El Cajon Boulevard, turning it into a real boulevard. It also leaves intact all on-street parking and the travel lane closest to the curb (so as not to negatively affect existing businesses). In the section through North Park, the park could be 62-66 feet wide, depending on configuration details; from I-805 to Fairmount, the park narrows slightly to 48-58 feet wide, again depending on configuration details.

Is that wide enough to sustain a linear park? One recent example of the creation of a linear park in the middle of a Boulevard is Sønder Boulevard in

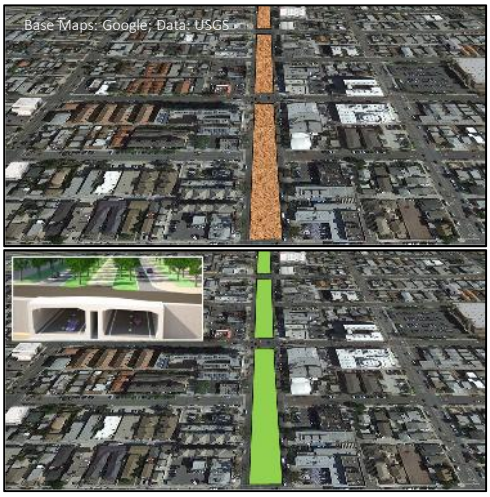


Figure 5.19
Replacing the Surface
Construction of tunnels will involve digging up much of the existing Boulevard. Should all road lanes be restored, or would parkland be of greater value to the community? (Inset on left is example from the Netherlands).

Figure 5.20
Median Parkway
A median parkway would not affect parking for businesses.

Figures 5.21 (top) and 5.22 (bottom)
Sønder Boulevard, Copenhagen

Copenhagen (Figures 5.21-5.22). Originally a six-lane roadway, Sønder Boulevard was reduced to one travel lane in each direction, on-street parking, separated bikeway lanes, and sidewalks. The median park ranges in width from about 49-59 feet. The transformation is considered successful and popular.

There are many examples of the transformation of a street where excess auto space was converted to people uses. Passeig de Sant Joan in Barcelona essentially created linear parks along its sidewalks, pushed a narrow bikeway into the median, and reduced auto lanes to one in each direction, along with a transit lane (Figures 5.23 and 5.24). Berlin's tony Charlottenburg neighborhood features an attractive median park on the Tauentzienstrasse (Figure 5.25). At the very least, the Balboa Parkway should contain these elements:

Figure 5.23
Passeig de Saint Joan, Barcelona
This 165' wide corridor—about 25' wider than El Cajon Boulevard in North Park—opted to create linear parks alongside the sidewalks and place a narrow two-way bikeway in the middle of the road.

Figure 5.24
Passeig de Saint Joan, Barcelona
Note the tot lot playground on the left.

- *Design details*, such as the use of Talavera tile, Spanish Colonial details, and/or landscaping inspired by Balboa Park;
- *Small fountain and plaza areas* interspersed along the length of the parkway, such as by streets that do not cross the Boulevard (Figure 5.26);
- *A continuous walkway*, at least a certain percent of which is shaded during summer months;
- *Tot lots and playgrounds* spaced at least every 1/2 mile, if not closer;
- *Dog parks or walking strips*, spaced as continuously as possible; and
- *Other programmed spaces* and activities.

Rather than a monolithic design, the Balboa Parkway should be understood as passing through many different conditions that call for local adaptations. One goal could be to involve a large segment of San Diego's design community in working with each community on configuring individual sections of the parkway, consistent with the overall design and configuration framework. Each segment should tell something of the story of San Diego, the particular community the parkway is traversing, and the peoples that have settled there.

The Balboa Parkway can be expected to add nearly 18 gross acres of much needed

Figure 5.25
Tauentzienstrasse, Berlin
This street features a popular linear park in the median.

parkland to the North Park and Mid-City communities, extending near-access to parkland to a large swath of the population (Figures 5.27). But it is not an isolated project; as a component of the Sails to Trails corridor, it is just one of several treatments aimed at increasing parklands and public space at the core of the corridor. Other treatments are suggested in Figure 5.28. These include:

- The Broadway Rambla
- The Emerald Necklace
- The Alvarado High Line

Figure 5.26
Median Park Treatment
Fountains or statues mark key focal points.

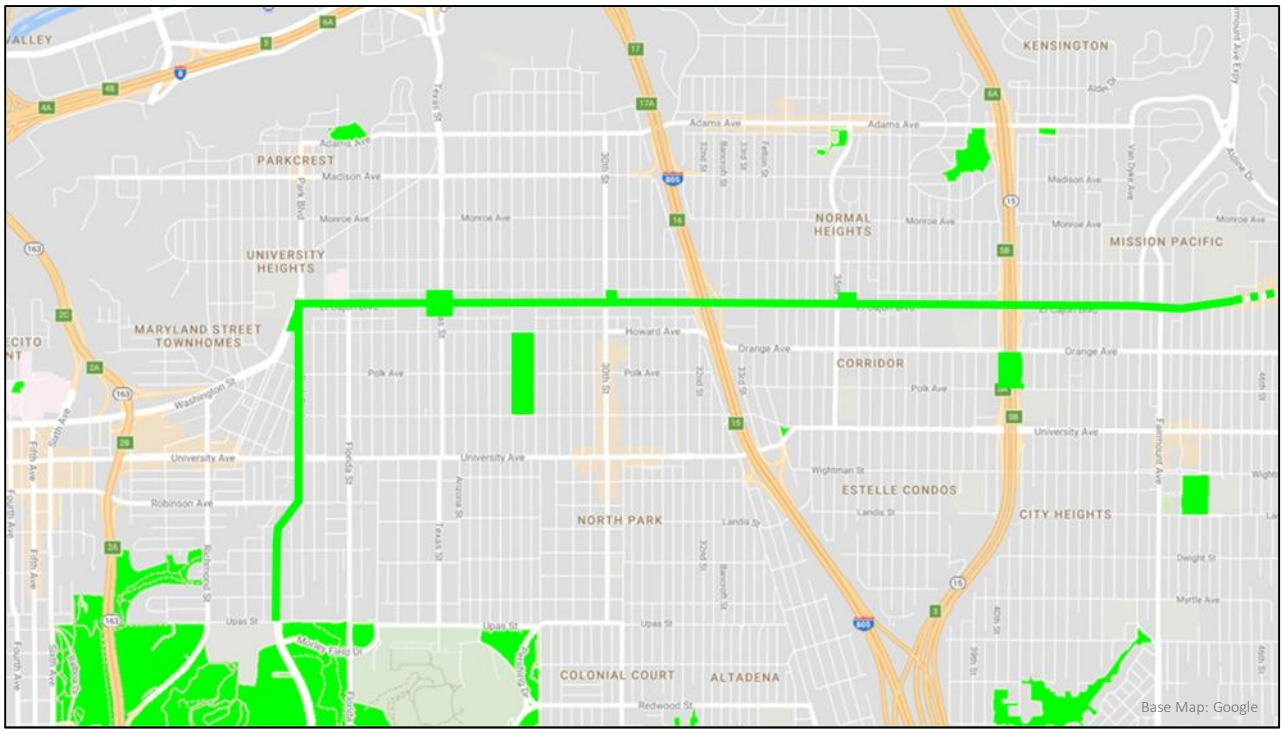


Figure 5.27
The Balboa Parkway
Running for approximately 3.65 miles from Balboa Park to Fairmount Avenue, the Balboa Parkway is intended to become a significant green resources for residents of the communities through which it passes. Four community squares become focal points for new development. They also become opportunities for special treatments, as gems on a necklace.

The Broadway Rambla is a proposal to convert lower Broadway (west of 3rd Avenue, where the right-of-way widens from 80 feet to 120 feet) to support a median Rambla, a pedestrian way with shade trees and cafes, modeled loosely on parts of the Rambla in Barcelona (Figure 5.29). This Rambla is intended to meet the needs of residents and employees, though it will obviously appeal to visitors and tourists as well.

The Emerald Necklace is an advanced proposal to create new parks on freeway decks over the I-5, along with linear park treatments along connecting roads. It anticipates the rebuilding of Balboa Stadium as well as building a parking

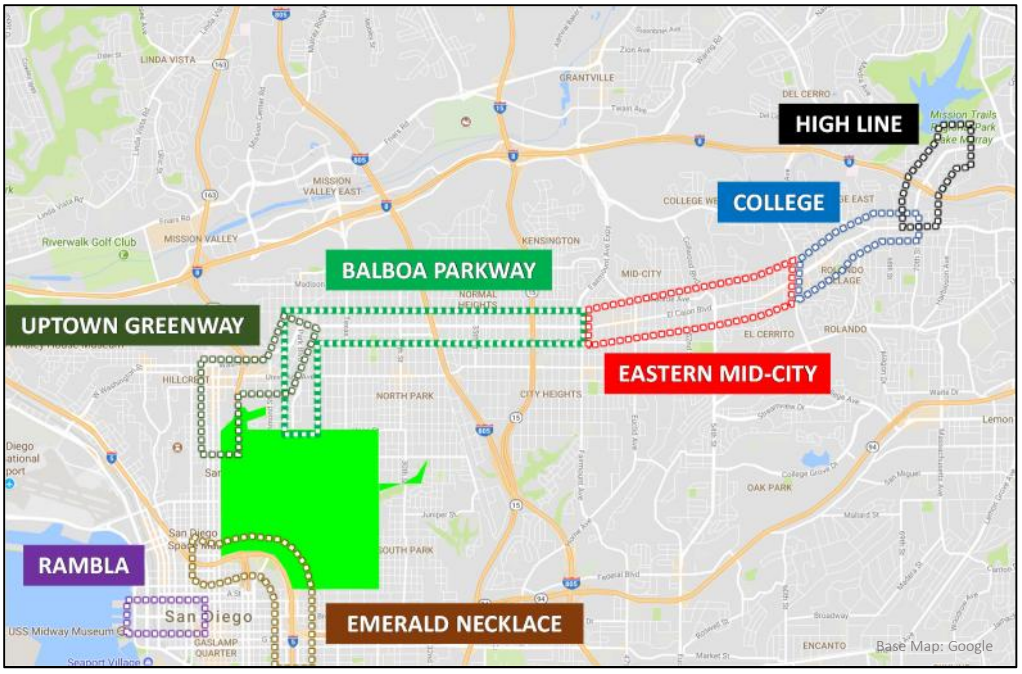


Figure 5.28
Sails to Trails Segments
Each segment of Sails to Trails calls for a different treatment.

Figure 5.29
Rambla, Barcelona
A rambla is proposed for lower Broadway.

structure into the freeway deck park. While conceived independently of the Quickway Proposal, the Emerald Necklace can easily be tied into the proposed transit network, solving a range of movement problems involving downtown San Diego.

The Alvarado Highline is a proposed "highline" elevated park and bikeway linking the Lake Murray zone with the El Cajon Boulevard corridor, making it easy for people and bicycles to cross Alvarado Canyon (Figures 5.31-5.32), which otherwise is unfriendly to both groups. It completes the link between San Diego Bay and Mission Trails Regional Park with a people-centric infrastructure, a major transformation of this historic growth corridor, but one that hopefully corrects many of the mistakes of the past, builds on

Figure 5.30
Proposed Highline
Alvarado Canyon is unfriendly to pedestrians and bicycles.

Figure 5.31
Highline in New York City
The Highline has attracted international attention and major real estate development.

the strengths of our past and present, and that hopefully helps promote widespread prosperity by adding to quality of life *and* by reducing the cost of getting around.

Should the City of San Diego prioritize major investments in the Sails to Trails corridor, it would likely stimulate a major redevelopment effort that would produce notable returns on investment for the city.

8. Plan for new development.

The proposed El Cajon Boulevard Quickway, by its innovative use of satellite stations, brings most of the Boulevard within North Park and western Mid-City within *easy* walking distance (1/6 mile or less) of a Rapid Transit station, with twice as many access points as planned in the 2050 RTP. As such, it favors linear development, since there are no "dead" spots along the Quickway beyond easy access of a station.

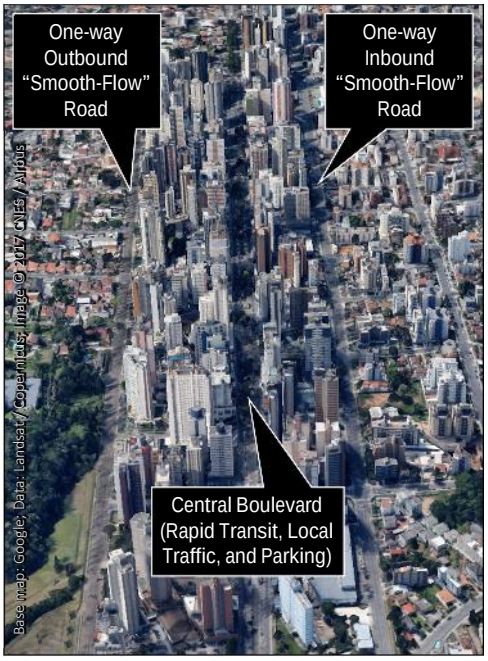


Figure 5.32
Curitiba "Trinary" Road System
Curitiba used its structural corridors to control growth.

As discussed earlier in this paper, Curitiba favored channeling its growth into "structural corridors" built around a "trinary" road network featuring a wide boulevard in the center with transit, on-street parking, landscaping, parks, and local traffic, flanked a block away on either side by one-way "smooth flow" roads. High-density residential was to be located *within* the two-block wide corridor (Figure 5.32). The reasons for concentrating development were simple and direct:

Reduced impacts. By locating new development within walking distance of mainline Rapid Transit, the greatest number of trips could be shifted to walking and transit from automobiles.

Amenities. Given the cost involved in building parks and people spaces, concentrating development means that whatever parklands and plazas are created will be within walking distance of the greatest number of residents.

Neighborhood Preservation. The strategy of concentrating development around transit freed up much of the rest of the city for single-family neighborhoods, preserving property values and ensuring a wide range of housing options for residents.

For the Balboa Parkway, a similar approach is proposed:

a. Concentrate development. Concentrated development is proposed for land areas within 600 feet or so of El Cajon Boulevard (in practical terms, the whole blocks north and south of the Boulevard), though some consideration should be given to including 50-100' of the blocks adjoining the Smooth Flow roads as well. Similar treatments should be expected of lots within 300' or so of the proposed parks. Figure 5.33 depicts the Strategic Investment Zone (SIZ).

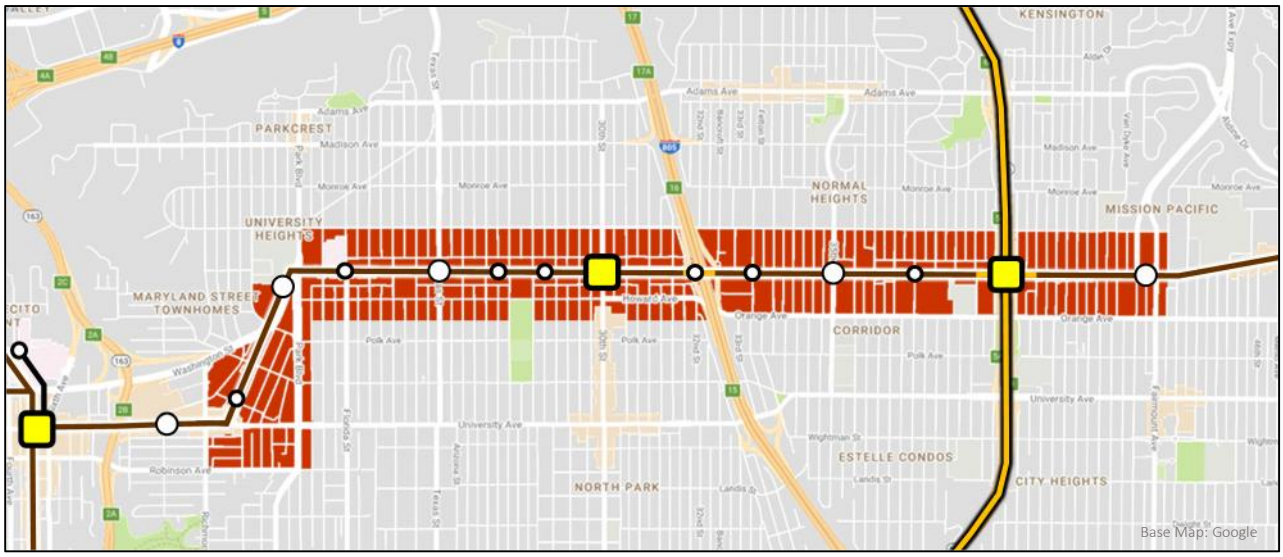


Figure 5.33
Initial Concept for SIZ (Strategic Investment Zone)
Given near-access to high-efficiency transit, the Balboa Parkway, and true bicycle infrastructure, the shaded area will experience intensive market demand for new housing.

b. Intensities. Within the SIZ, building intensities (height, floor area ratios, etc.) may be determined in consultation with the communities, but with the understanding that the intensity of development will help generate the funds to make the rest of the project become economically viable.

c. Codes. Consideration should be given to overlaying a "Form Based Code" on the Strategic Investment Zone. Form Based Codes describe the outer envelope and design features of buildings, shortening considerably the time it take any building that fits the code to become entitled (that is, get all necessary building permits). The easier and quicker the entitlement process, the easier it is for developers to do the right thing. San Diego is fortunate to have experts such as Howard Blackson, nationally recognized for his work with Form Based Codes, and other design professionals, such as Stephen Russell, who have thought long and creatively about the design challenges of this community.

d. Bonuses. Create a mechanism by which developers may add additional floors to developments, particularly in the immediate environment of stations/ Community Squares, if they meet other goals for restoring adjacent single-family residential neighborhoods and increasing the supply of affordable units. This was discussed in greater detail in Chapter 2, "Solving Problems: Why Transit Strategy Matters."

It is also possible to build into the Form Based Code design features that can further enhance the value of the corridor.

One such possibility is that of creating a terrace level on the 5th floor of buildings facing the Balboa Parkway or the Great Park by requiring buildings to step back after the fourth floor, perhaps by 20' or so. While most of this space would likely be offered as patio spaces to residences, the "Level 5" zone around Community Squares could support additional public spaces as well as eateries and clubs taking advantage of the views and feelings of openness. The Level 5 step-back also ensures that more air and sunlight reaches the parks below, enhancing their value and importance to the community.

There remain big questions as to how small lots may be combined to create developable plots for more large-scale redevelopment. One intriguing possibility is to create a mechanism by which current land owners exchange ownership in their particular plots with equivalent shares of a land development corporation that can then develop each block according to the opportunities that emerge, essentially spreading the risks while maximizing the overall value.

This approach becomes especially desirable if further study recommends splitting current blocks, which at approximately 600' long north/south are double the norm for walkable communities (Figure 5.34). Rather than create winners and losers—if blocks are split, then the owners of land bisected by any proposed new roadway would lose out on the opportunities for redevelopment—this approach spreads risks and augments rewards so that all benefit from any new activity, and no one individual pays a price for decisions that benefit the community as a whole.

Splitting blocks with a narrow right-of-way would be intended to create a reverse direction road to reduce the amount of traffic crossing the Balboa Parkway. Two travel lanes and a wide sidewalk would provide the needed space. This corridor could also serve to locate smaller, more affordable residences, given the lower value relative to units overlooking the Balboa Parkway, but such units, opening off of small courtyards as well as the street, could allow the widest range of housing types and prices within the same block, let alone same building.

9. Create new parklands.

Parks are expensive to create in an urban environment as they likely require takings of existing property. But even with the new Balboa Parkway, there will still be a significant shortfall of parklands to serve the residents of North Park and western Mid-City. If a way could be found to magnify the park space that could be created through takings, then this avenue should be explored.

The Great Park. Perhaps the most exciting discovery made in this planning process was what came to be called The Great Park of North Park. It began with the North Park Community Park, a small and unassuming park just to the south of the historic and iconic North Park water tower (Figure 5.35). The park does have one notable asset in the Ted Williams baseball diamond, where the famed slugger played

Figure 5.34
Block Splitting
Splitting the blocks within the SIZ would improve walkability and further reduce the amount of traffic crossing the Balboa Parkway. Even a 50' right-of-way would allow for two auto lanes, on-street parking and pick up/drop off zones, and a wide sidewalk on one side.

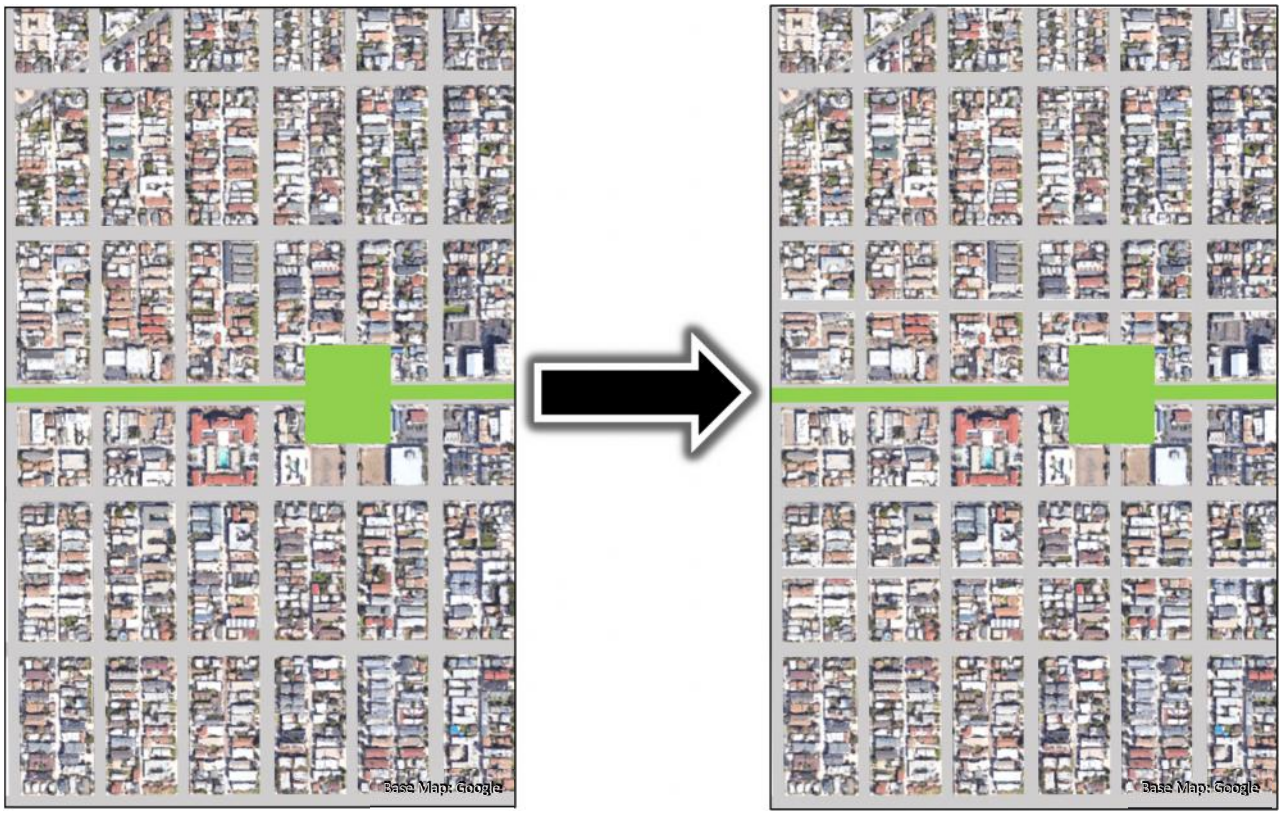


Figure 5.35
North Park Community Park
Surrounded by parking, the North Park Community Park fits a variety of uses into a small space. A unique feature is the baseball diamond where Ted Williams played as a youth.

as a youth. By many accounts, the North Park Community Park is not terribly successful as a park. What if it could be improved and made more prominent?

At first, this led to the notion of extending the park up to El Cajon Boulevard, where it would open off the Balboa Parkway (Figure 5.36). The existing ball courts would be relocated as part of a new athletic fields complex proposed for a deck over a part of the I-805 freeway, and the historic tower fully integrated into the design of a new park. The extension of the park to El Cajon

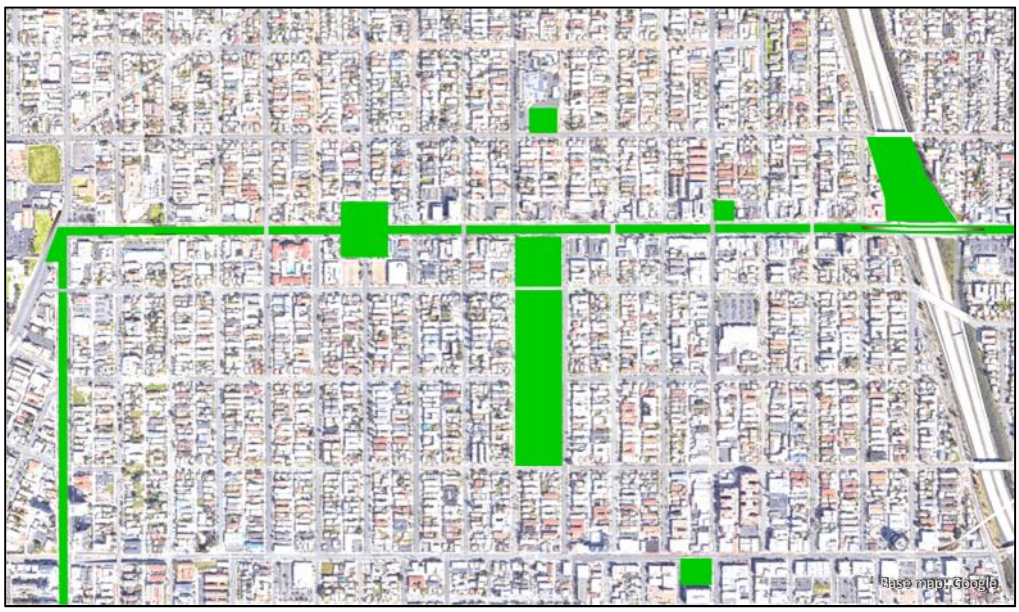


Figure 5.36
North Park Community Park
This aerial view shows an expanded park with the Balboa Parkway and station area Community Squares, as well as a small lawn area belonging to Garfield Elementary School. The sports courts have been located to a deck over I-805.

Boulevard is actually anticipated in the current Community Plan update. But what if we could do better?

This led to a series of speculative questions: how could we grow the park further? What if the park jumped over El Cajon Boulevard to occupy the commercial lots on the north side of the street? This would raise the prominence of the park that much more. But what if the park could grow even more? Three acres of residential development, most in the form of older "six-pack" and similar two-floor apartment buildings, separate the new park from Garfield Elementary School. What if the park bridged that distance (Figure 5.37)?

What about the property owners who would be affected, as well as the residents, many renters, currently living in the future Great Park? Takings of property should never be done lightly and without concern for those affected; while the law (and the courts) insist that those displaced be

Figure 5.37
Expansion of Park to the North
Three acres of residential lands stand between an expanded park and Garfield Elementary.

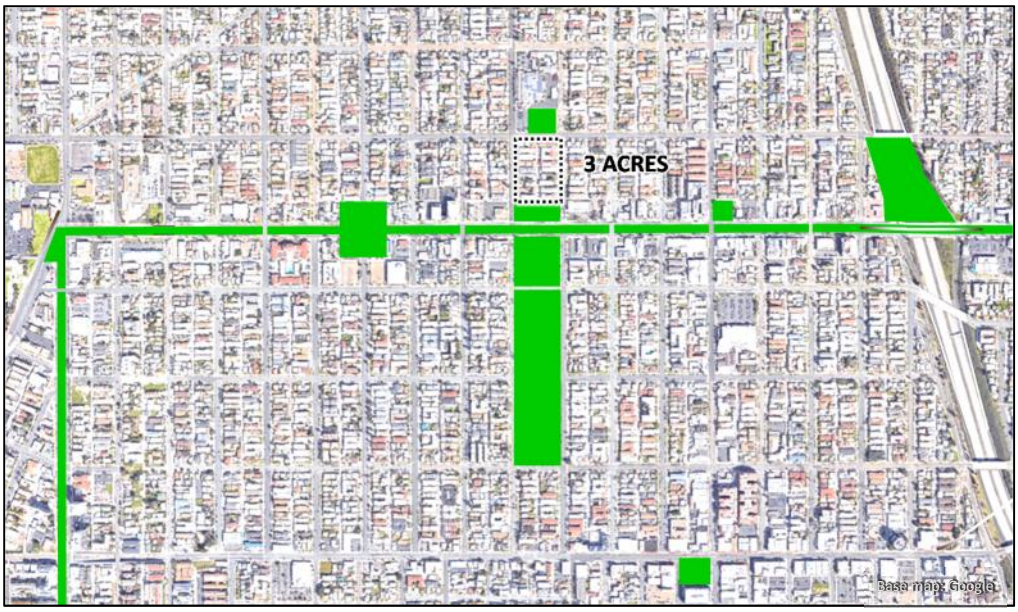
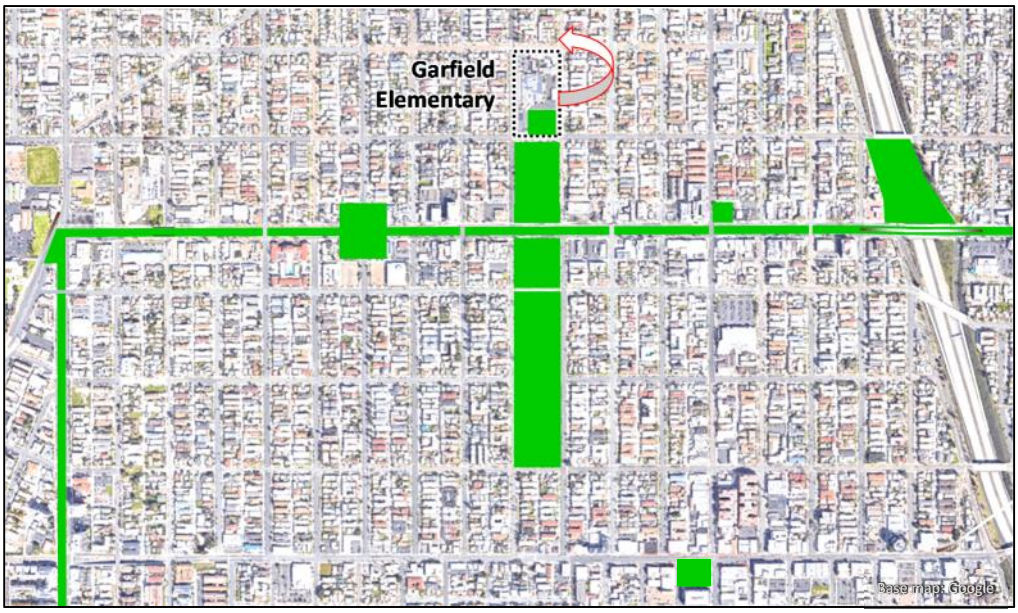


Figure 5.38
Relocated Elementary School
If Garfield Elementary could be relocated into a mixed-use development fronting the expanded park, the four acres it now sits on could be incorporated into the park.



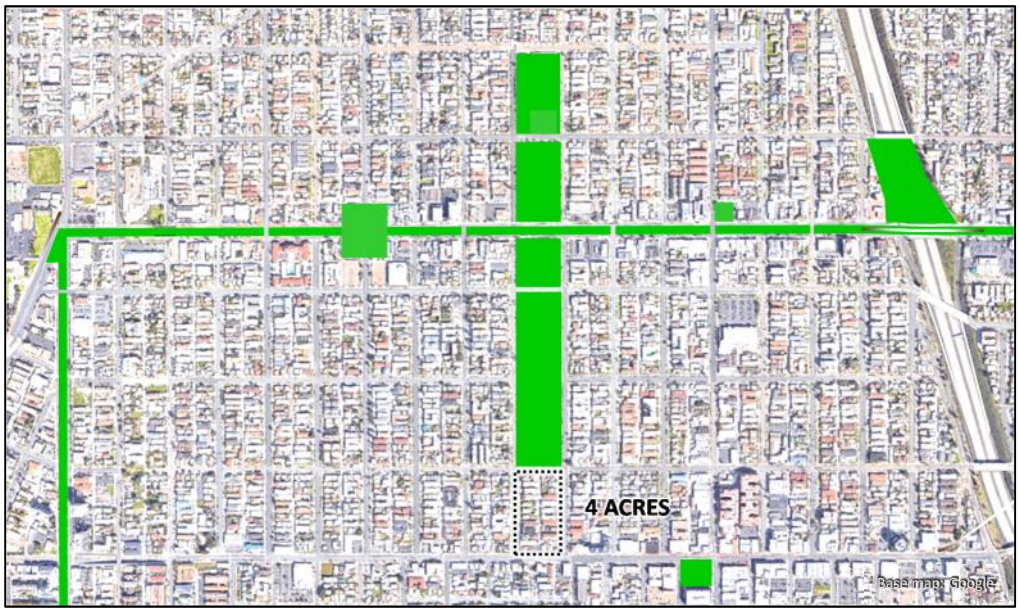


Figure 5.39
Further Expansion of Park to the North
In this scenario, Garfield Elementary is relocated into the lower floors of a new building facing the emerging Great Park.

Figure 5.40
Expansion of Park to the South
If the Great Park is brought down to University Avenue, it will require an additional 4 acres of residential takings, but the resulting park now covers 25 acres.

compensated adequately for any loss and inconvenience, the community might wish to establish some additional elements of any relocation program:

Timing. Any residential takings should await the development of new housing within perhaps ¼ mile of the buildings being taken, with current residents offered comparably-sized units at rents not to exceed their current rent for the period of time they have been living in their current residence. In this way, someone who has been living in an apartment for four years would have a four year "rate lock" on their future rent.

Compensation. Property owners should both be compensated for their land at current market values, however established, and given an ownership stake (of a value to be determined) in whatever redevelopment corporation is created to redevelop the blocks surrounding the takings; in this way, property owners would have a strong economic interest in seeing the overall program succeed.

Can more be done to expand the Great Park? The entire block to the north is occupied by Garfield Elementary School; if it were incorporated into a new mixed-used development fronting on the park, the park could be extended as far north as Monroe Avenue (Figure 5.38). At this point, the North Park Community Park has evolved into a 21 acre Great Park (Figure 5.39). But what if it could be enlarged even more? What if it still could be more than *doubled* in size?

Four acres of residential land separates the Great Park from University Avenue. A park linking University Avenue with El Cajon Boulevard would certainly be a major draw. If that block were to be folded in with the others, the park would now cover 25 acres (Figure 5.40).

Part of the issue with the Community Park is its width, about 312' by the ball field. What if the two adjacent streets, Idaho and Oregon, were folded into the park? (Figure 5.41) Admittedly, this would need

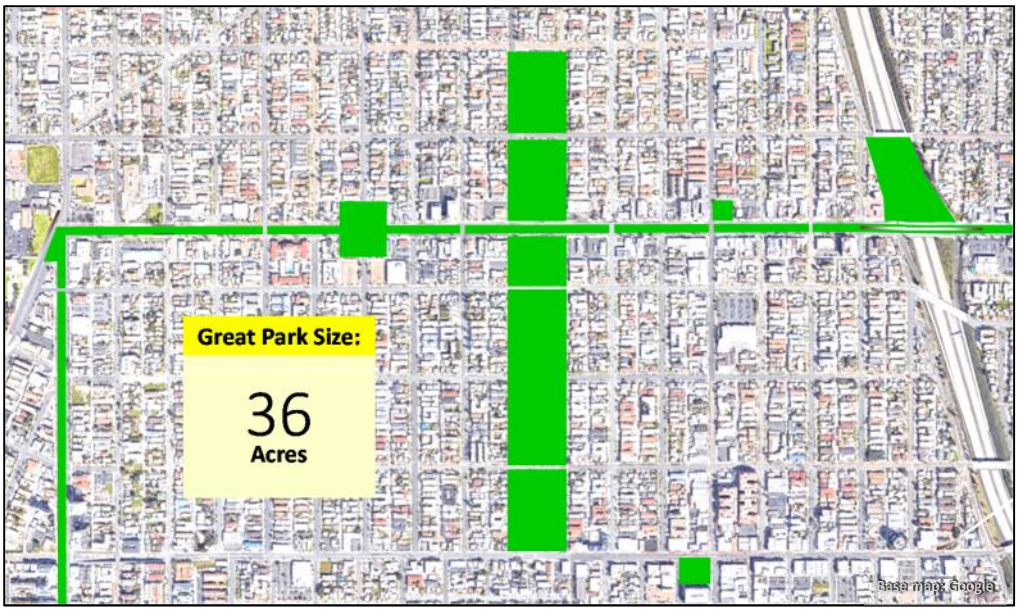


Figure 5.41
Expansion of Park by Widening
If the adjacent roadways are incorporated into the park, the width of the park is increased by about 44% and the overall size jumps from 25 to 36 acres.

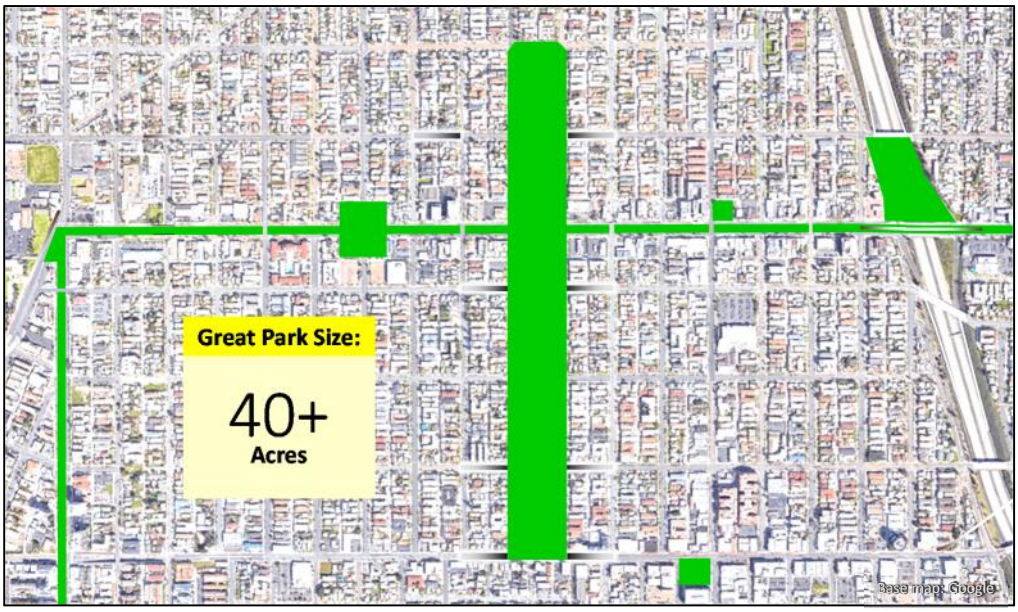


Figure 5.42
Car-Free Park
A set of underpasses allows the Great Park to operate as a single, unbroken expanse of green. In this case, a completely automobile-free space in the heart of North Park.

Figure 5.43
North Park Promenade
A green "promenade" can connect the Great Park with North Park Plaza and SuperStation.

to be staged along with the redevelopment of adjacent properties that currently rely on the street for access. But so major a project as a Great Park would be expected to produce redevelopment surrounding the park; buildings could then be oriented so that auto access were from other sides. The Great Park, though, increases to about 450' wide, adding a whopping 44% additional land to the park, *all of it currently in the public domain*.

Traffic, though, is still an issue, if the park is bisected by roadways, including the "smooth flow" roads. While attractive walkways are appropriate for a park, roads should be kept to a minimum, especially if they're moving a lot of cars. And that led to another notion: that this Great Park, in the very heart of one of the densest residential communities in the region, should be entirely car-free. In practice, that means underpasses at Meade, El Cajon Blvd, Howard, Lincoln, and University, aided by the elevation change just to the west of the park. While expensive, the underpasses also end up adding over 4 acres of additional parkland and make the park contiguous, nearly 4000' long (Figure 5.42).

It is possible to significantly reduce the costs of the proposed underpasses by simply raising the park by anywhere from 5-15 feet, especially if parking is located beneath, at surface or near-to-surface levels. These parking resources would include spaces serving the community as well as dedicated spaces that would be incorporated into adjacent redevelopment. It may be that the park changes levels to correspond to parking and underpass locations. Either way, additional technical analysis can suggest the best approach.

With University Avenue taken beneath the Great Park, another opportunity opens up. Just to the east of the park, the University Avenue right-of-way widens from 80 to 100 feet. Currently, the roadway widens to take advantage of the additional space, with about 26 parking spaces. What if the roadway were kept narrow and the additional strip of land on the south side folded into the current sidewalk to create a linear park connecting the Great Park with the North Park Community Square and SuperStation (Figure 5.43)? The Satellite Entrance proposed for 28th Street would lead directly into the Great Park as well, solidifying the connection of University Avenue to the park. The linear park would be wide enough to sustain a 2-way bicycle facility and double rows of trees linking the square and the park.

One final detail remained… where the park crosses the Balboa Parkway. If the park were widened to include the commercial lots half a block on either side along El Cajon Boulevard, the Great Park becomes a 45 acre expanse with a major public crossroads, the Balboa Plaza, at its heart (Figure 5.44). This plaza could be ringed by eateries and cafes (located in buildings adjacent to the plaza), contain fountains large and small and plenty of seating, and be a visible "extension" of Balboa Park. A Quickway SuperStation is planned for 30th & El Cajon Boulevard; it would feature a satellite shuttle connection to the Great Park. Parking opportunities could be located by Texas Street connected by

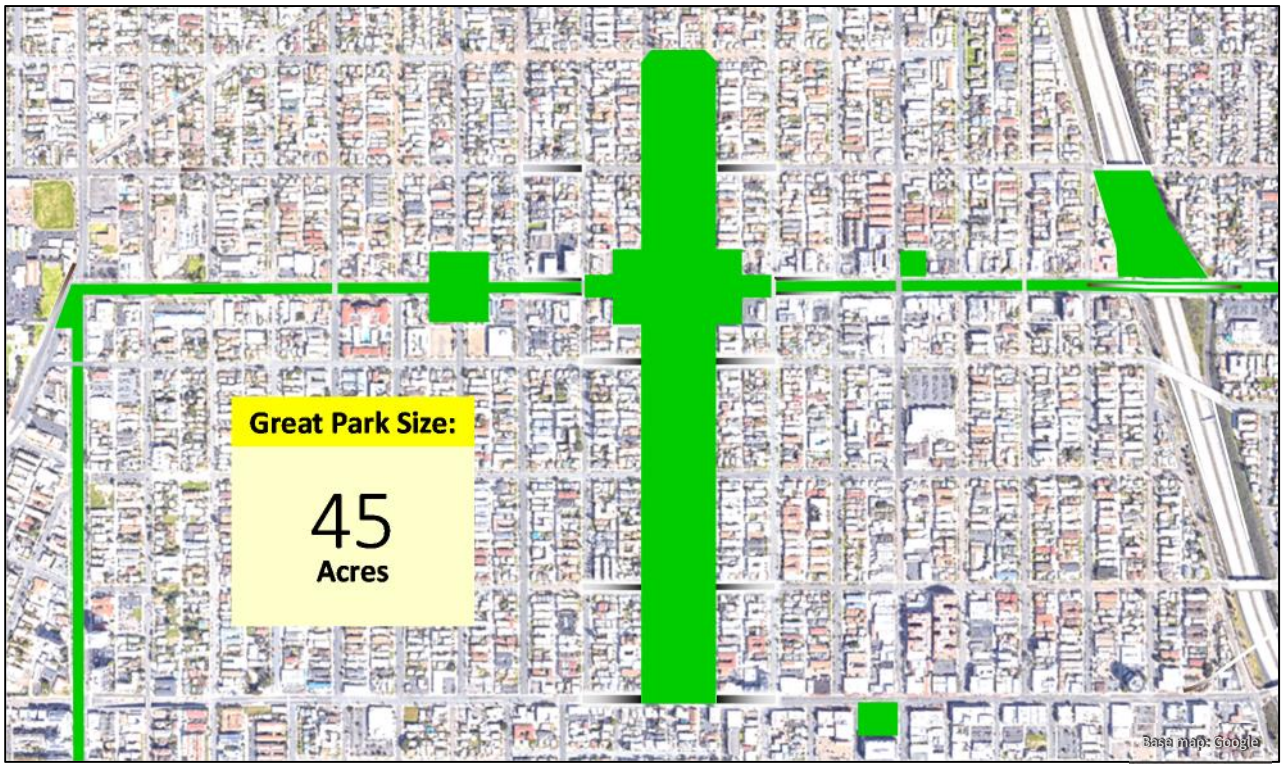
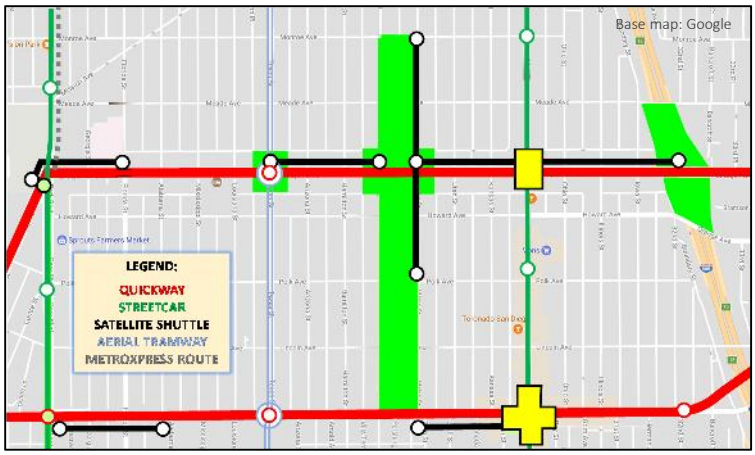


Figure 5.44
The Great Park
At 45 acres, the Great Park is just short of 4000' long by about 450' wide.

Figure 5.45
Satellite Entrances to the Great Park
No part of the Great Park is more than a long block from a station entrance.

satellite shuttle to the Great Park; some parking may be even located beneath the park, especially if the park is slightly raised, as there will be several roads traveling beneath the park that could easily open to parking. From Balboa Plaza, additional satellite shuttles would connect the northern end of the Great Park and the lower middle (Figure 5.45).

The Great Park, at 45 acres, could transform North Park in many ways. Its size compares favorably with other parks and popular beaches (Figure 5.46). The park could be programmed and designed to reflect different uses (Figure 5.47); at the northern end, by a relocated Garfield Elementary, a children's park would be appropriate. South of the water tower, it might be possible to create a large beach and swimming lagoon (Figure 5.48). Farther south, other athletic facilities and quiet park space might be appropriate. A "night park," incorporating the Balboa Plaza, water tower, and perimeter of the lagoon/beach could be filled with twinkling lights, winding paths, and be a romantic evening stroll.



Though the Great Park is partially part of the transit project, the expense of moving existing residents, building underpasses, moving two schools, and creating a new park is substantial. How can it be paid for?

The answer is through extending the "Strategic Investment Zone" of the structural corridor to the blocks immediately surrounding the Great Park (Figure 5.49) and by developing an infrastructure finance district mechanism, such as a Mello-Roos tax on *new* development, to pay for park, school, and

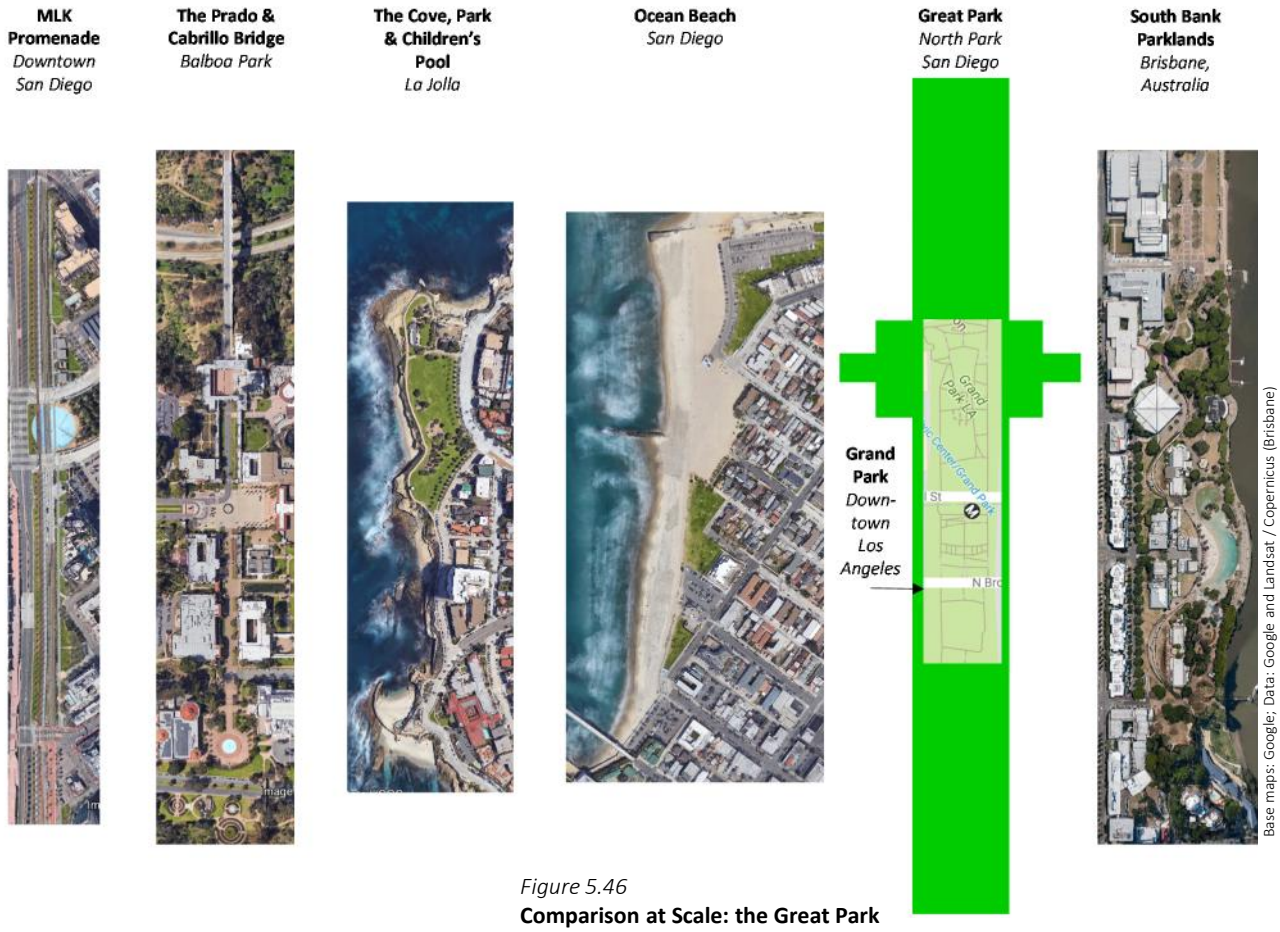


Figure 5.46
Comparison at Scale: the Great Park
At 45 acres, the Great Park is as large as or larger than many popular parks and beaches. LA's new 12-acre Grand Park is placed here on top of the Great Park to illustrate their relative size.

underpass development. Further analysis can determine minimum threshold levels, but initial numbers suggest that such a financing mechanism would generate significant funds.

Jay Powell Park. Beyond the Great Park, what about the western portion of Mid-City? If a small Community Square were incorporated into the 35th Street Quickway Station, there are a number of possibilities (Figures 5.51, 5.52, and 5.53) to create a community-serving park, perhaps with a water feature or water park, on the border between Normal Heights and City Heights, named here for Jay Powell, a tireless champion of Mid-City. Again, these would be partially paid for by redevelopment of the lands surrounding the park, implying a final modification to the SIZ (Figure 5.54).

Finally, there is yet another opportunity to create more recreational space. The reconfiguration of travel lanes to a "trinary" road network (central boulevard

Figure 5.47
Programming the Great Park
Balboa Plaza sits at the heart of the Great Park. The area to the north is recommended for family activities; a beach/lagoon may go in the middle.

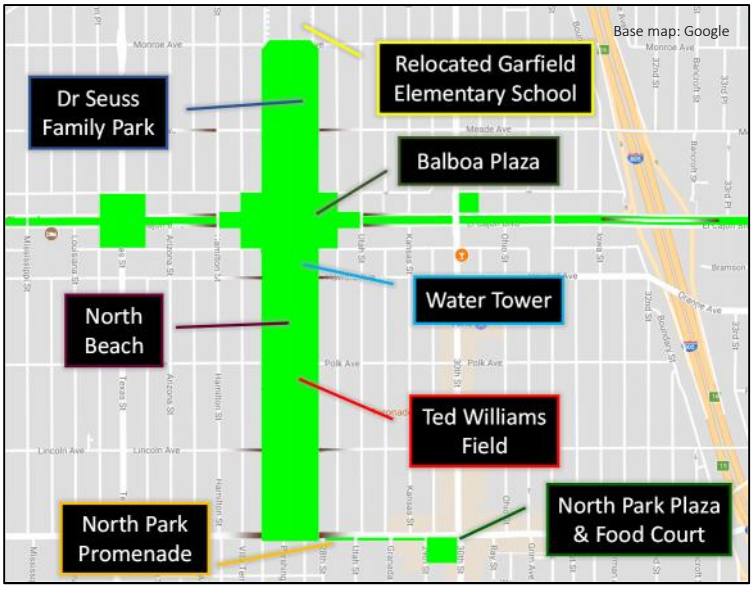


Figure 5.48
"Streets Beach," Brisbane, Australia
This swimming lagoon is within the South Bank Parklands. An even larger lagoon could comfortably fit within the Great Park.

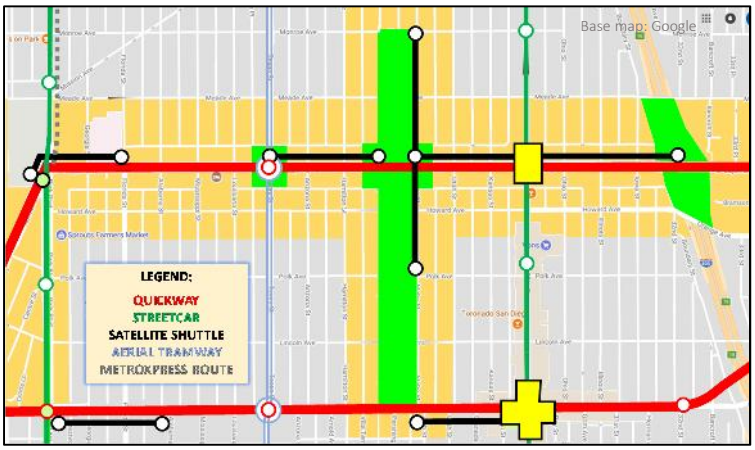


Figure 5.49
Expanded Strategic Investment Zone
The area surrounding the Great Park may be expected to generate intense market demand which may be capitalized on to pay for the improvements.

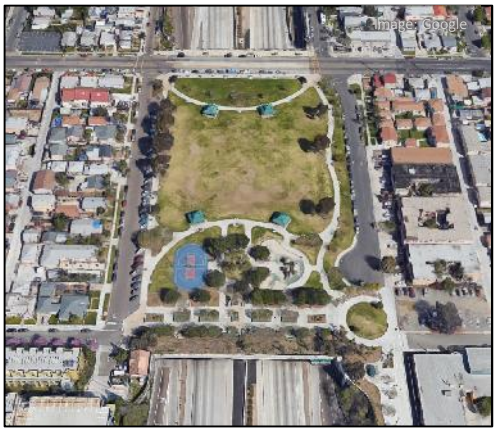


Figure 5.50
Teralta Park
Mid-City's Teralta Park, built on a deck floating over I-15, is a relatively new park addition to Mid-City.

flanked by one-way signal-timed roads) implies the reconstruction of freeway onramps and offramps. Though there are several potential configurations, any will need to accomplish these design goals:

a. Allow traffic exiting I-805 in either direction to access either Orange Avenue eastbound or Meade Avenue westbound;

b. Allow westbound traffic on Meade and eastbound traffic on Orange to enter I-805 going north or south; and

c. Allow cars on Meade or Orange to cut over to the other without having to use surface streets or wait for signals.

Rebuilt ramps may be designed so that they are capped by a deck or decks (much like the Teralta Park built over I-15) (Figure 5.50), either spanning the freeway or just occupying the public right-of-way on either side of the freeway, which may then be used for sports fields and courts (such as the ones relocated from the current Water Tower facility). Additional parking could also be built into these structures, so that people driving to either the fields or the community could exit off the freeway, park immediately without entering local roads, and use transit to access destinations. In this case, a "satellite shuttle" is expected to connect the fields with the 30th & El Cajon Super-Station, which also serves a streetcar line and features a satellite link to the Great Park, so someone could exit I-805 and park without entering surface streets and ride the two satellite shuttles to the Great Park conveniently and easily.

An additional satellite entrance to the 35th Street Quickway Station is planned for a short walk to the east, by 33rd Street.

It should be noted that some maps of the Quickway Proposal depict the SuperStation moved to the Great Park itself, with the 30th & El Cajon station turned into a satellite entrance to both the Great Park and the I-805 sports fields. Both locations are viable; further study and community consultation can help determine the optimal location for the SuperStation.

Figure 5.51

City Heights Park Concept #1

This concept produces about 7.8 acres of new parkland and plaza. The park is mostly linear, though line-of-sight will be interrupted by the raised crossing of Meade Avenue (the underpass would only be expected to lower that road by a maximum of 6-9 feet). A water feature could occupy part of the northern "bulb" of this park, and enhanced landscaping on Madison Avenue could connect the park visually to the east with Normal Heights Elementary School and Ward Canyon Park beyond it.

Figure 5.52

City Heights Park Concept #2

This concept produces about 8.75 acres of new parkland and plaza. The park extends directly from the Town Square plaza, though it will need to rise to pass over Meade Avenue. The width of the northern section of the park allows for a range of uses.

Figure 5.53

City Heights Park Concept #3

This concept produces 13.5 acres of new parkland and plaza. A Satellite entrance to the 35th St Quickway Station occupies the northwest corner of the park. The park is slightly raised where it crosses Meade Avenue in order to preserve a more gradual slope on the underpass. A prominent water feature may occupy part of the northern section of the park.

Figure 5.54
Adjusted Strategic Investment Zone (SIZ)
Development around the parks helps pay for those parks, while transit and bicycle infrastructure helps mitigate the effects of growth.

10. Rebuild the *entire* right-of-way.

The Balboa Parkway represents what happens when we rebuild the center of El Cajon Boulevard following the transit, water, and sewage project. But other cities have gone farther in major transit projects, not just building the transit itself but renewing the entire public right-of-way, building face to building face. Perhaps no American city has done this quite like Cleveland, which created a new transit line, the Health Line, on its main east/west thoroughfare, Euclid Avenue—a road not unlike El Cajon Boulevard in terms of its historic role in that city.

The Health Line project involved the complete rebuilding of the public right-of-way. Not only did they get the new busway in the corridor; they got new sidewalks, new landscaping, a reconfigured road (reduced, like the proposal here, to a single travel lane in each direction), and new transit stations. What's more, the public investment in the corridor has attracted $5.8 billion dollars in additional private investment (Figure 5.55), making Cleveland the leading success story in using a transit investment to drive new development and a repopulation of that city's core neighborhoods.

For San Diego, rebuilding the entire corridor would allow for Amsterdam-style bikeways. Such bikeways fully separate cyclists from automobiles except at crossing points, where design elements, striping, and signaling can reduce the potential for collisions. These bikeways also feature a buffer zone of about 3' from parked cars, reducing significantly the danger of collisions with car doors (Figure 5.56) as well as with people exiting their parked cars. The design goal of the completed facility would be to enable people of varied abilities and ages to cycle easily and safely from anywhere along the corridor through to downtown, Mission Valley, Five Points/Middletown, Point Loma, and Balboa Park.

Another advantage of the rebuilding approach is that it allows us to fit more into the right-of-way. By cleverly locating street trees in-between pairs of parked cars, an additional 5-8' of land may be redeployed per side of the street (10-16' total), in this case to the linear park; otherwise, creating new bike lanes on the existing boulevard would reduce the width of the Balboa Parkway by 10-20'.

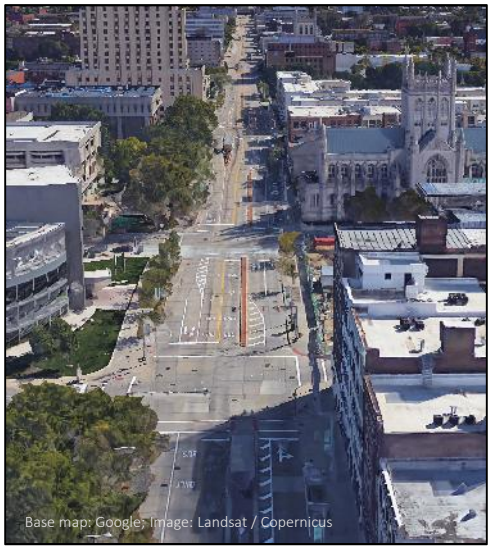


Figure 5.55
Euclid Avenue, Cleveland
Cleveland's investment in reconstructing its central corridor, Euclid Avenue, has paid off in billions of dollars of additional privately-funded development and a resurgence of housing in the core of the city.

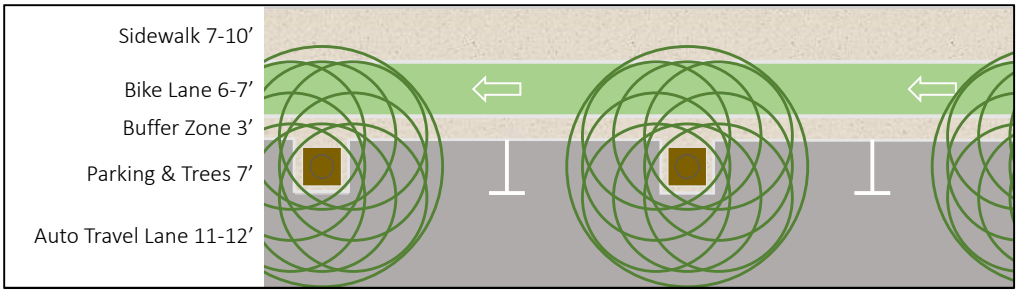


Figure 5.56
Amsterdam-Style Bikeways
Amsterdam has created a connected network of protected bike lanes that encourages cycling by making it safer and easier.

6. Building the Balboa Parkway

Figure 6.1
Pre-Boulevard Reconstruction Projects
Once projects 1-5 are completed, construction of the new Quickway tunnel and water / sewer / storm water systems may commence.

Though the proposals for the Sails to Trails corridor appear to be complex, there's a logical flow to what gets built and when; the steps involved highlight project viability.

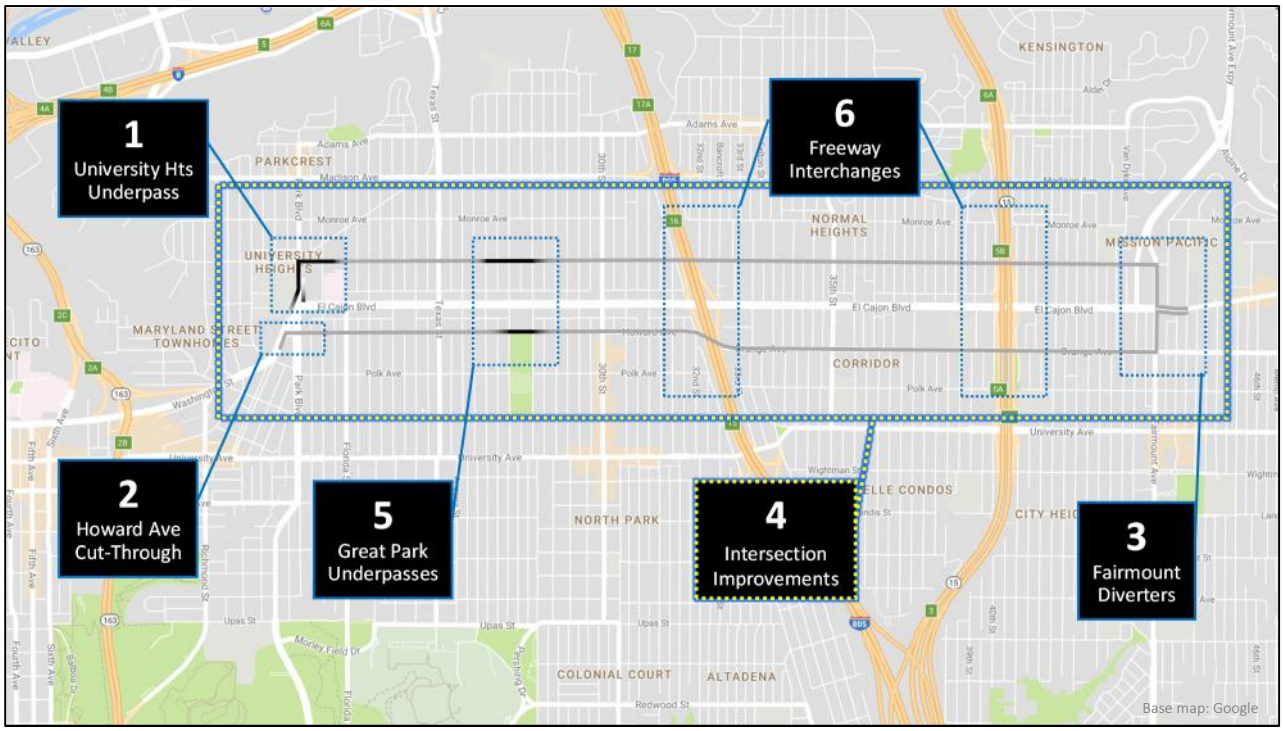
Prepping the Corridor

We've already seen how even the relatively temporary shifting of through-traffic off El Cajon Boulevard and onto the parallel roads would require new road infrastructure at the western end in order to make the transition seamless with minimal impacts on other roads. If that shift is to be permanent, though, then future improvements will need to be built up-front so as to avoid major disruptions to traffic flows once those parallel routes become traffic thoroughfares.

There are six components to the first stage of infrastructure investment in North Park and Sails to Trails, following the development of the Uptown 2025 and Mid-Coast Supportive Projects (Figure 6.1).

1. The University Heights Underpass is one such piece of infrastructure. It may be designed to move two or three lanes of through-traffic beneath the segment of Park Boulevard between Meade and El Cajon Boulevard (Figure 6.2).

Parallel to the University Heights Underpass is a short tunnel segment linking Park Boulevard (north of El Cajon Boulevard) to the Quickway Tunnel, for use by MetroXpress routes and possibly the Park Boulevard streetcar. This short tunnel segment should be built concurrent



with the Underpass project to minimize construction impacts on the community.

2. The Howard Avenue Cut-Through is another piece of infrastructure that will call for the likely reconfiguration or replacement of the existing gas station so that eastbound traffic may move directly from Normal Street to Howard Avenue.

Figure 6.2
University Heights Underpass
The image above depicts a two-lane tunnel segment linking Meade Avenue (the tunnel entrance may be found just north of the hospital) with Normal Street (the tunnel exist terminates by the Ed Center), as well as a new direct link to Howard Avenue from Normal Street. This is the least expensive tunnel option. This map does not depict the short access tunnel from Park Boulevard north dropping into the Quickway tunnel, which would be used by any routes branching out to serve University Heights and Normal Heights.

Figure 6.3

University Heights Underpass, Expanded Option

A more robust—and expensive—approach would be to take both directions of travel into a tunnel beginning just south of Polk Avenue. This allows for assembling a 5 acre redevelopment site, half of which is currently made up of public roadways.

Other options are possible for this location. At the more extreme end, the diverter tunnel is extended about another 1000' so that westbound traffic emerges onto Washington Street just to the south of Polk Avenue (and using topography to its advantage), and eastbound traffic is similarly tunneled through (Figure 6.3). The streetcar, meanwhile, is brought below grade to a mezzanine level within the Quickway station; on the north end, the streetcar tracks merge with a Quickway spur that rises to Park Boulevard to support MetroXpress routes serving University Heights and beyond.

This concept allows 2.11 acres of land now occupied by Normal Street to be converted to other uses (park and/or new development); when combined with properties in the triangle, over 4.5 acres are added to the Ed Center site for potential redevelopment. Together with the Birney School, the redevelopment site becomes nearly 25 acres in size, a substantial area, with a Quickway station and community square (John Nolen Plaza, named for the famed planner who inspired Normal Street as part of his recommendation that San Diego be built around broad boulevards).

It might be possible to design the diverter project so that it would be possible to "upgrade" from the cheaper approach to the more complex one in the future.

3. The Fairmount Diverters can be produced by the reconfiguration of the existing roadways without the need for significant construction. However, if the goal is to eventually extend park treatments eastward in the El Cajon Boulevard corridor, consideration should be given to undergrounding the diverters so as to create new park space on the surface (Figure 6.4). This is a pricey project, at an estimated cost (auto diverters and initial transit tunnel segment) of around $200 million, but it improves automotive flows, ties Hoover High School into the Balboa Parkway (the proposed "Hoover High Open-Air Theatre" serves as

Figure 6.4
Enhanced Fairmount Diverter
One alternative—there are many possibilities—is to create a park on the surface by depressing traffic in the transition zone east of Fairmount Avenue. Such an approach would harmonize with San Diego Unified's rebuilding of Hoover High School as well as their existing investment in the Hoover stadium and "paseo" walkway. In the proposal below, a small amphitheater is Hoover's stage to showcase its many talented students.

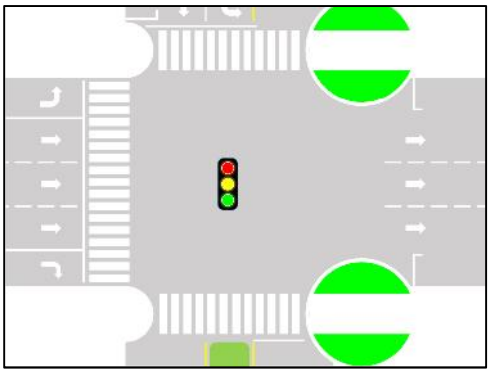


Figure 6.5
Sample Intersection on Smooth Flow Roads
Intersections along the "Smooth Flow Roads" will need to be configured to support safe and steady traffic flows. At only 52' wide, they are much easier to cross than a major boulevard, plus the shorter crossing cycle improves intersection capacity.

the terminus of the Balboa Parkway), and demonstrates a commitment to residents of the eastern portion of City Heights that they will also receive benefits from the Sails to Trails development.

This raises the issue as to how the eastern half of the Sails to Trails corridor is to be approached. It will likely see development pressure, especially as the Balboa Parkway, new bikeways, and new transit projects improve the value of the entire corridor. El Cajon Boulevard is not wide enough east of Fairmount Avenue to support bikeways and linear parks along with existing auto travel lanes within the existing right-of-way and there are no easy candidate parallel roads for traffic diversion. If the only solutions are expensive, what return would we need on that investment to justify the effort?

It is beyond the scope of this paper to answer that question, but it is hoped that, as the Sails to Trails corridor becomes a focus of regional and municipal attention, the needs and opportunities of the eastern half of that corridor receive thoughtful consideration and are prioritized for the funding necessary to create useful infrastructure, including parklands, public spaces, effective transit, and global-standard bicycle facilities.

4. Intersection Improvements. Along the length of both parallel roads (Meade Avenue and the Howard/Orange pair), improvements will need to be made to support smooth, continuous flows of traffic. Many intersections will need to be signalized, and drainage reworked where dips are currently used. The design goal should be to support continuous flow at the adopted speed limit (25 or 30 mph) to minimize braking. A sample street intersection is depicted in Figure 6.5.

5. Great Park Underpasses. There are strong reasons for making the Great Park an automobile-free space. To accomplish this will require the construction of underpasses (Figure 6.6). Two are necessary before traffic can be diverted onto the parallel streets (Meade Avenue and Howard Avenue); the El Cajon Boulevard and University Avenue underpasses can be built along with their respective Quickway / water projects; the remaining underpass (Lincoln Avenue) may be built at the time of park improvements.

6. I-805 and I-15 Interchanges. While it is not necessary to change these ramps at first (cars may access them using the remaining travel lanes on El Cajon Boulevard), they would benefit from reconstruction to permit cars to enter/exit directly from Meade and Howard/Orange without needing to use El Cajon Boulevard. Reconstruction of these interchanges could also free up some land by El Cajon

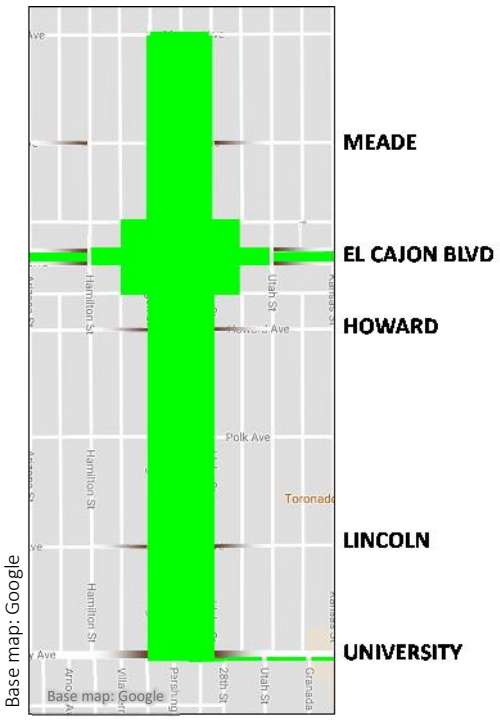


Figure 6.6
Great Park Underpasses
Five roads pass beneath the Great Park, ensuring that it remains a 100% car free space in the very heart of a very urban neighborhood.

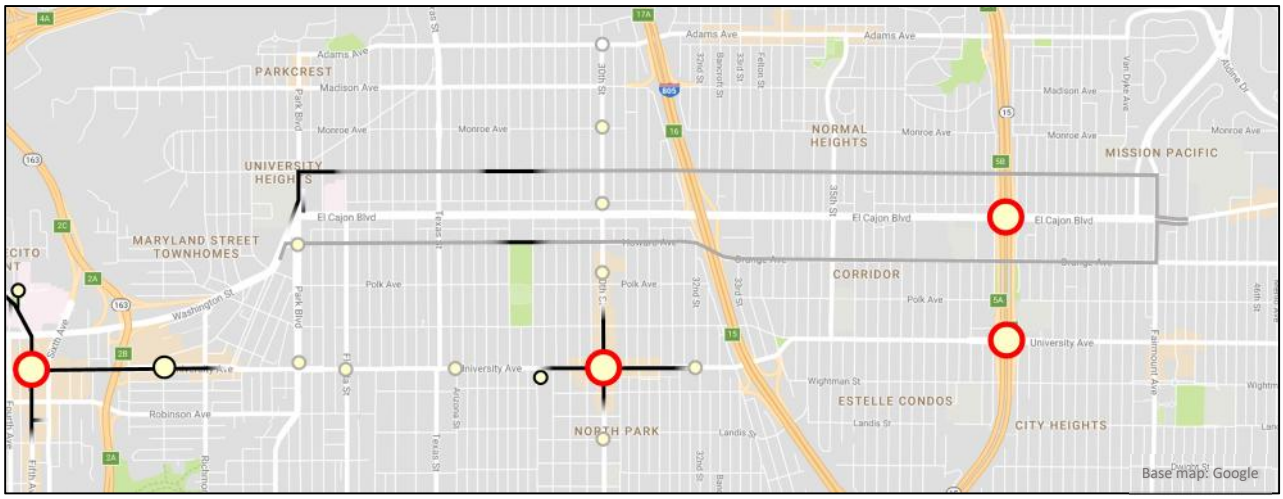


Figure 6.7
"Prepping the Corridor"
Prior to building the Sails to Trails Quickway projects, the Mid-Coast Supportive Projects (including the Uptown Quickway and the North Park SuperStation) and parallel road projects should ideally be completed.

Boulevard that could be used for athletic facilities (such as the courts currently beneath the North Park water tower).

If space permits, these interchanges should be designed to allow not just freeway access but quick access between the two parallel roads, diverting traffic away from the Balboa Parkway and allowing people to easily access locations both east and west by automobile.

Building the Quickway

One advantage of Quickways relative to other modes is that they may be built in disconnected pieces, as discussed earlier in this paper. Quickway construction can aim at building the highest-value pieces first so that they may become operational sooner rather than later. Until individual pieces are completed, transit vehicles can continue to use surface stations and lanes.

Again, it is worth noting that key pieces of both the Uptown 2025 Proposal and the Mid-Coast Supportive Projects must be in place before the Sails to Trails Quickways. The Uptown Quickway generates major time savings and ridership demand within the Sails to Trails corridor by linking to major employment sites and the Trolley, and the Marston Greenway makes an essential connection to both Downtown and Mission Valley. The "Prepping the Corridor" projects (Figure 6.7) are also expected to be completed.

Pre-Project. Preceding the Sails to Trails Projects, two transit projects are recommended for the Sails to Trails corridor as part of the Mid-Coast Supportive Projects: the Uptown Quickway, mentioned just above, with its terminus on University Avenue by Normal Street; and the North Park SuperStation, which sits at the center of an approximately 2500' Quickway tunnel beneath University Avenue and an approximately 2000' transit tunnel (for streetcar and MetroXpress vehicles) beneath 30th Street. The North Park SuperStation also includes a Satellite Entrance on University Avenue by Utah Street.

Stage 1. Five elements comprise the first stage of project construction (Figure 6.8).

1.a. Uptown Extension. An extension of the Uptown Quickway onto Normal Street and beneath University Avenue to approximately Alabama Street. This extension would save over four minutes of travel time during the AM commute on University Avenue, and would also avoid a long signal at Normal Street for vehicles serving El Cajon Boulevard and Adams Avenue. A Satellite Entrance to the Uptown District Station is suggested for Normal Street by Harvey Milk Street.

1.b. The Ed Center Station complex, with a Quickway segment beginning on Normal Street south of Polk and terminating on El

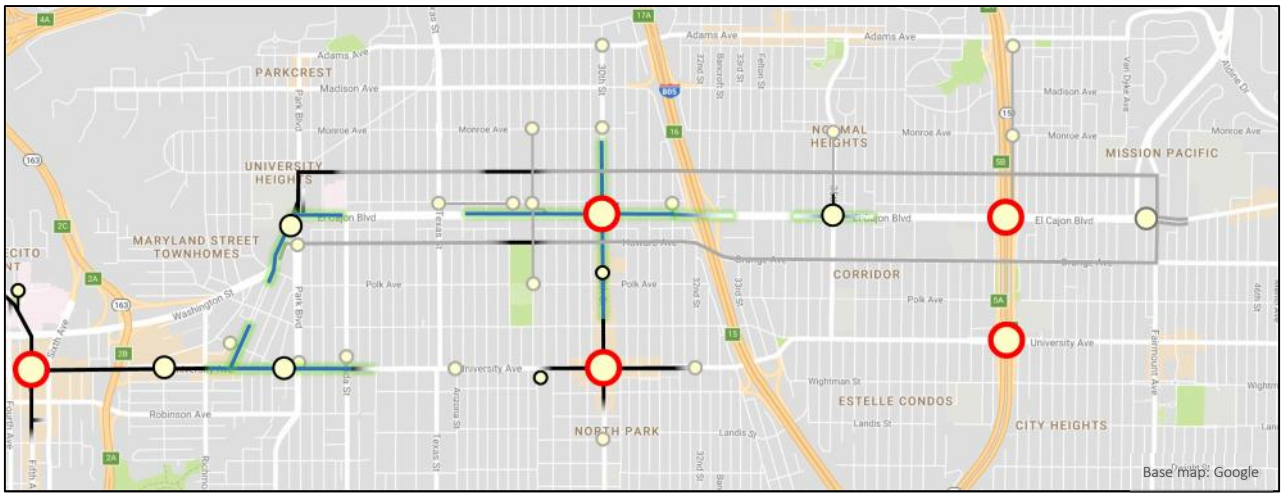


Figure 6.8
Stage 1 Projects
The first stage of Quickway implementation creates new stations and Quickways on both the El Cajon Boulevard and University Avenue corridors.

Cajon Boulevard by Florida Street. Some pieces of this might be built jointly with the Ed Center Diverter should that prove more cost effective. Transit vehicles using this segment would avoid major signal delays. A Satellite Entrance to the Ed Center Station is recommended for El Cajon Boulevard by Florida Street (Figure 6.9)

1.c. The Great Park to 805. At approximately 2/3 mile in length, this is the longest contiguous Quickway segment to be built in Stage 1. It includes the 30th & El Cajon SuperStation, and Satellite Entrances at the Great Park (including by Monroe and by Polk) and Ohio Street (the latter temporary). It also includes a short extension of the streetcar tunnel beneath 30th Street to just north of Meade Avenue and passing through the Mezzanine level of the 30th & El Cajon SuperStation.

1.d. The 35th Street Station. This piece involves a station on El Cajon Blvd by 35th Street, as well as access tunnels on either end, as well as the Community Square and a Satellite Entrance by 35th and Monroe Avenue.

1.e. The Kensington Satellite Entrance. This piece involves the creation of a Satellite Entrance for the Boulevard SuperStation by Adams Avenue in Kensington, with an intervening stop by Monroe Avenue. Some guideway infrastructure might be required to implement this shuttle effectively. It might also need to await the rebuilding of the freeway ramps.

Stage 2. Four pieces comprise the second stage of Sails to Trails Quickway development (Figure 6.10).

2.a. The DMV Connector is a short Quickway segment linking the Uptown Quickway extension with the Ed Center Station complex.

2.b. The University Avenue Connector links the Uptown Quickway extension with the North Park SuperStation tunnels. Upon completion, a transit trip from 30th & University (North Park SuperStation) to Fashion Valley would be entirely within Quickway infrastructure; on an all-stops "Mainline" route, that trip would be down to about 9 minutes, and on a future MetroXpress route, to just a little more than 6 minutes (the trip today takes 24 minutes during the PM commute).

Figure 6.9
Florida Street Satellite Entrance
A Satellite Shuttle is seen leaving for the Mezzanine level of the Ed Center Quickway Station.

2.c. The Texas Street Connector links the Ed Center Station complex with the Great Park to 805 section. It includes a station at Texas Street and Texas Plaza, which is elevated relative to Texas Street. Once completed, vehicles entering the Quickway on El Cajon Boulevard by I-805 will travel entirely within Quickways to Fashion Valley.

2.d. The City Heights Extension is a short Quickway segment linking the City Heights SuperStation (University Avenue at I-15) with the City Heights Village, a notorious traffic knot, with a below-grade station by Fairmount Avenue and a short spur leading to Fairmount Avenue south of University.

Stage 3. The final set of elements to be built complete the connections. Three are anticipated (Figure 6.11).

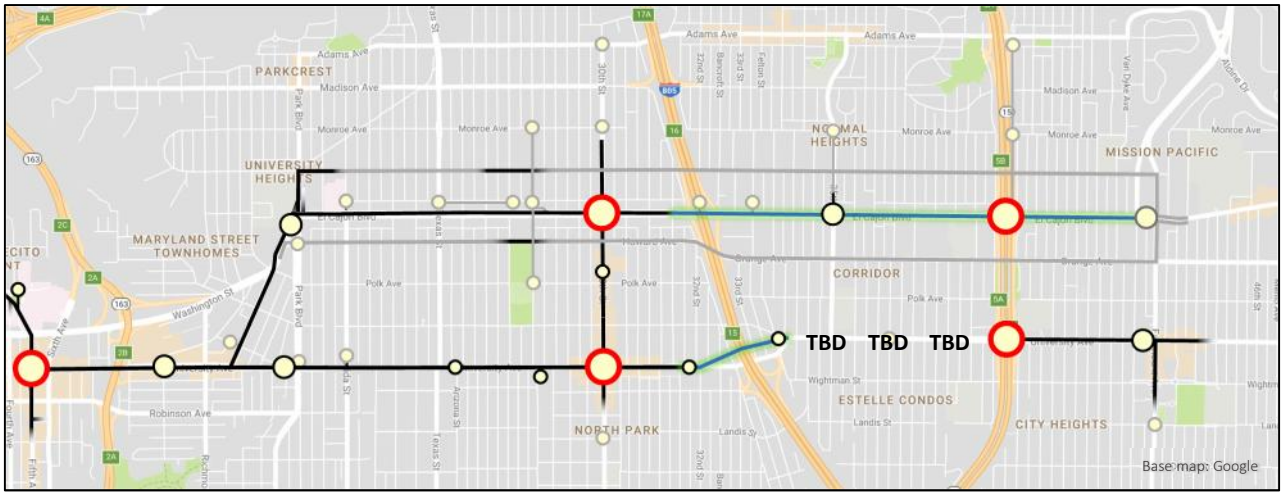
3.a. The Boulevard Connector completes the connection on El Cajon Boulevard from I-805 to Fairmount Avenue, connecting with the 35th Street Station.

3.b. Wabash Flyover is a short Quickway segment most likely elevated over I-805, connecting the Quickway tunnel beneath University Avenue in North Park with University Avenue east of I-805, thereby avoiding the traffic knot of the I-805 ramps.

3.c. Wabash to I-15 Connector is as yet undefined; further analysis will be required to identify the appropriate right-of-way to carry Quickway-based Mainline and MetroXpress services through this segment of University Avenue. This analysis will need to anticipate land use changes in this zone.

Figure 6.10
Stage 2 Projects
Stage 2 projects complete the Quickway linkages between North Park and Fashion Valley and add new stations at Texas Street and Fairmount Avenue.

Figure 6.11
Stage 3 Projects
Stage 3 projects further extend Quickway infrastructure east to Fairmount Avenue.



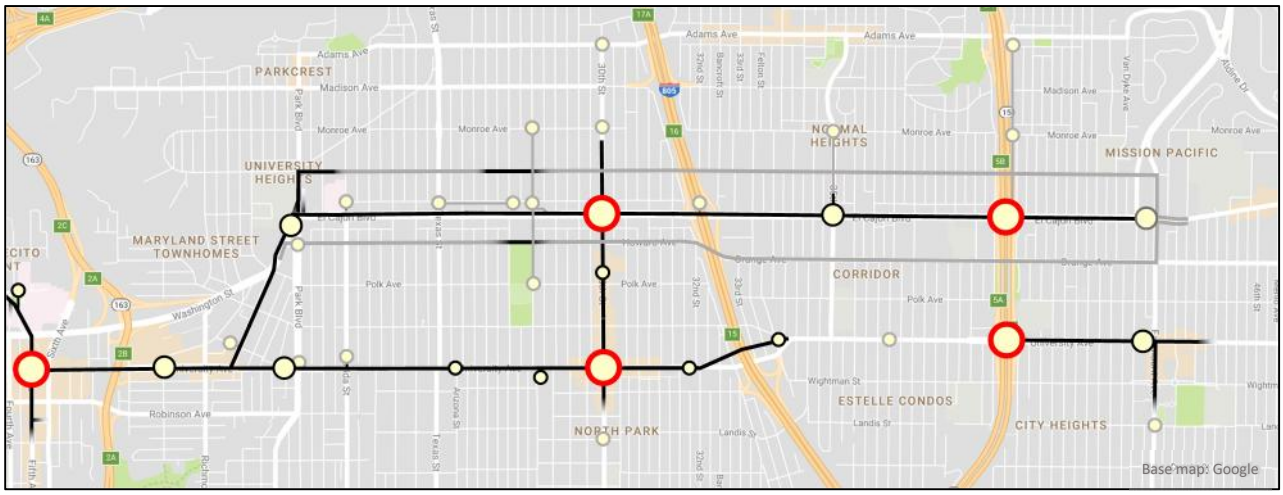


Figure 6.12
Completed Quickway Projects
Upon completion, North Park and western Mid-City will have world-class transit designed to be more effective by linking to more places more quickly.

Rebuilding the Freeway Ramps

Given that the bulk of through-traffic is being routed onto parallel roads, there will be a need to replace the current offramps and onramps to both I-805 (Figure 6.13) and I-15. The rebuilding project may commence at any time in the project but should ideally be completed before the Quickway projects themselves are completed, or at least as soon after traffic is diverted as possible.

Figure 6.13
New I-805 Ramps
The design goal of rebuilt freeway ramps is to permit freeway access to both Meade Avenue and Howard/Orange Avenues, while also allowing cars from these two roads to easily cut across to the other so as to facilitate movements in the east/west directions.

The El Cajon Boulevard Quickway will make a dramatic contribution to the quality of life of the entire region. Routes using the facility branch out to connect residents with destinations ranging from the San Ysidro border to UCSD, from the Airport to Kearny Mesa, from the Sharp Hospital complex in Serra Mesa to the Sharp Hospital in La Mesa, and to almost all of the employment, recreation, and shopping sites of Mission Valley, let alone to much of the residences there (Figure 6.14).

How to Pay for All This

At first blush, the Balboa Parkway and related infrastructure can be off-putting to those concerned about costs, especially as San Diegans are reluctant to fund major efforts without assurances that the benefits outweigh the costs, and that those benefits are widely distributed.

The Balboa Parkway is viable only as a component of a transit construction project. The Great Park is viable only with an effective transit infrastructure to help drive the amenity value and mitigate the traffic and parking impacts. The Community Squares likewise depend on the transit stations to generate foot traffic. And the bicycle infrastructure likewise piggybacks and ties into the transit project. So the Quickway project is at the basis of any of these other “bells and whistles” that may be added to the core transit service.

The transit project may be justified on the basis of potential ridership alone—it is the ridership potential of the Sails to Trails corridor that would favor this project through the Federal New Starts Program, which is used to help finance large-scale transit projects. When combined with water, sewer, and storm water projects—for the transit project will necessarily involve displacements to this infrastructure and the need to rebuild large sections of it—it will be possible for San Diego to use funds from multiple sources as components of the "local match" requirement of different State and Federal funding programs. By combining the projects, the transit becomes viable. By building the transit, the Balboa Parkway becomes viable, as does the Great Park and the Normal Heights/City Heights Park. By building the transit, it becomes possible to rebuild the corridor, outfitting it with state-of-the-art bicycle facilities. With these bikeways in place, the Uptown Bicycle Greenways become viable. When they are all built and functioning, the aerial tramway from Texas Street to Mission Valley and Morley Field becomes viable. The pieces reinforce each other.

If this book has a key point, this is it: San Diego can have renewed urban communities by adopting a strategy that leverages the right infrastructure—Quickway transit—in the right place to produce major results for the community. The alternative is a worsening of quality of life and continued crises with transit we can't afford to properly operate, water and sewer mains that continue to fail, housing we can't get built, and road congestion that each year seems to resemble Los Angeles more than it does San Diego. We have a once-in-a-generation opportunity to act; let us hope we do the right thing.

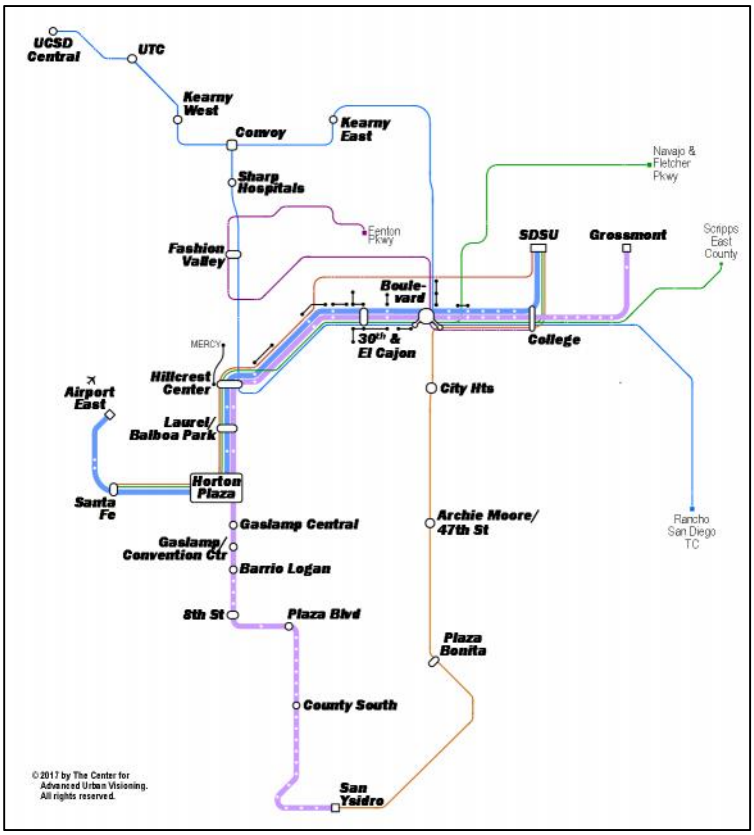


Figure 6.14

Proposed Mainline and MetroXpress Routes Using the El Cajon Boulevard Quickway

The map above shows routes using all or part of the Quickway segment recommended for development in this Discussion Paper. The map shows SuperStations served, as well as terminus stations.

Afterword

Cites are growing, ever changing organisms. They get larger and they get smaller. They decline and they revitalize. Planning and building a city is like a personal relationship: you must work at it continuously for it succeed and to thrive.

The *Sails to Trails* study recognizes this in a number of critical ways. San Diego's older neighborhoods are changing. There is growth. And that growth is very diverse; it is through infill and redevelopment. But it is also through overcrowding because of the shortage of affordable housing. And new growth is happening in areas that have been neglected, including the lack of investment in public services and facilities.

The *Sails to Trails* study presents a new and innovative way of approaching these issues. But it also raises the question of why we didn't think of these solutions earlier, because the approach is so straightforward and common sense.

Sails to Trails goes beyond the question of how to provide better accessibility. It shows how to maximize the benefits of public improvements by combing projects, i.e. building a transportation facility, upgrading utilities and, improving the public realm in one combined project. This type of integrated solution comes about by rethinking how we improve our communities.

The *Sails to Trails* proposals not only improve our built environment, but of equal importance, they also improve the health of residents by creating more walkable places and places to engage with others and to connect with nature.

Sails to Trails provides a potential city-building planning framework for a number of interests. For public agencies and decision-makers, it is a lens to look at individual projects holistically to better plan to meet regional goals. For the planning and design community, it presents a comprehensive picture of many of the ideas and concepts that we have talked about for many years. And for residents, it is a vision of what their neighborhoods could become.

— **Michael Stepner, FAIA, FAICP**
San Diego, California
October 2017

Appendix A: The Case for a New Regional Transit Plan

The case for a new regional transit plan is built on ten points.

1. Virtually all of the region's growth plans revolve around transit.

***Housing*.** Most new housing will be built within ½ mile of transit.

***Mode share*.** Transit is expected to absorb a large share of new trips.

***New riders*.** To attract new riders, transit must be perceived as *convenient*, *affordable*, *safe*, *fast*, and *attractive*.

***Benefits*.** The more transit attracts new riders, the more station-area development we can expect.

2. We'll need to shift many trips to transit and other modes to meet ambitious Climate Action Plan targets.

Mode shifting required. Regional long-range goals require that many automobile trips be shifted onto transit. This is why our regional growth strategies call for locating new development near transit.

***The opportunity*.** If a transit system could significantly increase its contribution toward these targets for a comparable—perhaps even cheaper—cost, it would make sense to pursue the possibility.

3. Middle-income auto commuters must be attracted to transit to meet our goals.

***Trolley riders same as bus*.** For both Trolley and MTS Bus, over half of all riders hail from households with annual incomes below $35,000; about 80% are from households earning less than $50,000.

Drivers aren't switching to transit. The Trolley attracts relatively few people with cars. About 64% of Trolley riders did not have access to a car for their trip, only marginally better than the 72% of bus riders without auto access.

***Transit use is actually declining*.** According to the US Census, the use of transit for commuting in San Diego has been trending downward. Even more troubling, carpooling—the basis of our massive investments in HOV and managed lanes—has decreased by a third since 2001, the largest decrease of any transportation mode.

4. SANDAG's current regional transit plans are unlikely to meet modal shift goals.

***Minimal time savings*.** SANDAG's current plans, after spending more than $20 billion on new projects would reduce the amount of time the average transit trip takes by only about 19%, cutting a 60 minute commute to 48.6 minutes—an improvement, certainly, but still generally uncompetitive with the automobile.

***What's missing*.** Transit is more likely to achieve modal shift goals when it is time-competitive with driving for a large set of commutes and the station experience provides better protection from rain, sun, cold winds, and moving vehicles.

5. Transit must be better located, significantly faster, more frequent, offer a better experience, and be easier/more convenient to use, if the goal is to attract many more riders.

Walking is key. A major nationwide study of transit ridership by the New York-based Transitcenter found that the most important "first mile/last mile" solution is walking. Most transit riders, including 80% of all-purpose riders, typically walk to transit. This is why transit stations need to serve busy, walkable neighborhoods; why offices and housing should be built within walking distance of transit; and why safer pedestrian routes to transit matter.

Time savings is key. The two most important determinants of rider satisfaction with transit are ***service frequency*** and ***travel time***. The availability of information and conditions at the station or stop were also important, suggesting that ***real-time information*** and ***shelters*** are important amenities for transit agencies to provide.

Go after all-purpose riders. All-purpose riders are the most reliable and financially efficient customers to serve. They are found where it's ***easy to walk*** to transit, and where transit is ***frequent*** and provides access to ***many destinations***.

6. Failure to achieve transit goals imperils our future prosperity and quality of life.

Opposition to development. Communities often oppose new development because of traffic and parking impacts.

Severe housing shortfall. We need to be building 14-15,000 dwelling units a year to meet market demand, but are building only around 6,000/year. This leaves families and individuals stretched even thinner by rising rents, with employers looking at shifting jobs out of state.

Creating receptivity. If communities experiencing significant growth pressures were targeted for integrated infrastructure that made transit useful for many, created new public space and amenity, and that successfully managed parking and traffic impacts, then communities would be more receptive to new development.

Choosing better alternatives. If a cost-effective means of creating this infrastructure can be identified, then the benefits to the region would be immense.

7. San Diego residents need a more effective transit plan.

Desired results. A smarter transit plan reaches into more urban centers, slashes travel time, reduces wait time and transfers, is more convenient to use, and features stations that provide better safety and comfort.

A better plan exists. The Quickway Proposal is such an alternative. It advocates a fundamentally different strategy for transit development.

Ridership gains. The Quickway Proposal is expected to nearly double ridership per invested dollar compared to the RTP.

Cost savings. Capital costs are projected to be several billion dollars less than our current plan (our capital cost model accurately projected costs on several projects across North America).

Reduced subsidies. Projected reductions in operating subsidies of billions of dollars by 2050.

New development. The Quickway Proposal places real infrastructure in the heart of our most urbanized zones, mitigating the parking and traffic impacts of new and existing development.

8. The Quickway Proposal is a more effective plan and can be built in stages, each of which would provide an immediate benefit.

Staging. The first set of Quickway projects—the Mid-Coast Supportive Projects—are designed to increase ridership on new and existing Trolley lines, create an effective transit system within the urbanized core, and support areas

under development pressure where the right infrastructure can mitigate the effects of traffic and parking congestion.

***Value*.** For a cost similar to the Mid-Coast Trolley, the Mid-Coast Supportive Projects add twice as many rapid transit stations and about 90 arterial ("Rapid Bus") stations built to a new, customer-friendly model.

***Expected results*.** These projects will contribute more to climate change goals than any transit project in the RTP.

9. The Quickway Proposal integrates well with parallel infrastructure (bicycle, walking, etc.) and land use plans for several communities, creating synergies and solving real problems.

***Uptown 2025*.** The Uptown 2025 Proposal looks at creating infrastructure to mitigate ongoing development in the Uptown communities. This Proposal was endorsed by the Hillcrest Town Council and the Bankers Hill Community Group.

***Smarter integration*.** By integrating road, parking, world-class bicycling, landscaping, and parklands/people space into a coherent whole, Uptown could become the poster community for how to achieve Climate Change Goals.

10. The Quickway Proposal shows how the right transit infrastructure, backed by the right service plan, can better achieve our goals and notably improve regional quality of life.

Avoid "second class transit." San Diego does not need to settle for a "second class" transit system that fails to attract large numbers of middle-income residents.

***Quality of life*.** A different strategy can produce a transit system that plays a far more central role in helping our region improve quality of life for all residents and better supports regional prosperity.

Quickway Station
Brisbane, Australia

Appendix B: The Quickway Proposal in Brief

The Quickway Proposal is a strategy for creating a world-class and regionally effective transit system for San Diego. Unlike current plans—which rely on several new Trolley lines, and many new "Rapid Bus" lines (some freeway-running, most arterial-running)—the Quickway Proposal is designed to:

Improved coverage. Better serve our denser, more urban neighborhoods,

Time savings. Cut transit travel time by nearly 2/3,

Save money. Reduce operating subsidies,

Support development. Better support locations experiencing development pressures, and

Build ridership. Attract many more riders by offering a compelling and competitive alternative to driving from many more origins to many more destinations.

Figure B.1
Australian Quickway and Station
This station is integrated into a hospital.

1. What are Quickways?

Quickways are grade-separated transitways with the following characteristics:

Travel lanes. Between stations, they commonly feature a single travel lane in each direction;

Grade-separation, so all cross traffic (both auto and pedestrian) goes either over or under Quickways, like with a freeway;

Real "rapid transit" stations featuring passing lanes (for express services), typically spaced about a mile apart (closer in some areas, farther in others);

"SuperStations," which are larger and at which express services stop (SuperStations are typically spaced 3-5 miles apart); and

Route structure. At least three kinds of services use Quickways:

1. ***Mainline routes*** serve all stations;
2. ***MetroXpress routes*** skip most intervening stops; and
3. ***Emergency services*** (the Quickway Proposal directly serves most major hospitals in the region).

In addition, excess Quickway capacity may be leased to delivery companies, provided all drivers are trained and certified to use the facilities.

2. Are Quickways "BRT" (Bus Rapid Transit)?

Not rail vs bus. Quickways are *not* a "BRT" (Bus Rapid Transit) proposal nor is the proposal even remotely about an unproductive rail vs. bus debate. Rather, the proposed strategy suggests a smarter way to evolve toward a "permanent" rapid transit system.

Evolve to rail. It begins by using buses (much like our new Rapid Buses), but is designed to develop and grow into some other more advanced guided technology, such as rail, over time.

3. What are the core elements of the Quickway Proposal?

The Quickway Proposal consists of the following elements:

Quickways. A core network of about 100 miles of Quickways, the majority of which are surface-running but still grade-separated to optimize transit flows and reduce operating costs.

Surface "T-Ways" (at-grade transitways) and bus lanes feeding into and off of the Quickway infrastructure.

Light rail extensions where these extensions make sense.

Streetcars. At least three new streetcar systems.

Improved stations, including a modular arterial station that provides better protection from the elements (sun, wind, and the occasional rain) as well as from moving vehicles.

"Satellite" entrances to stations, using automated vehicles operating like "horizontal elevators," extending the effective reach of certain stations to get people much closer to origins and destinations with minimal waiting (per the illustration on the right, looking down at city blocks and streets).

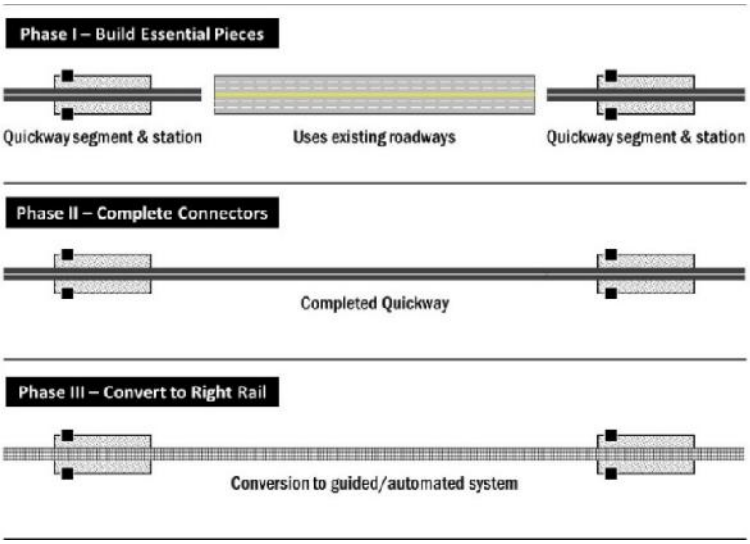


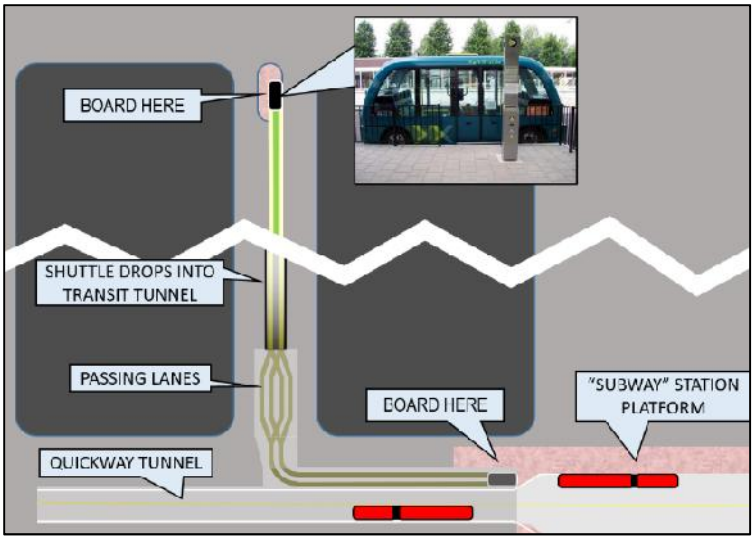
Figure B.2
Quickway Migration Path
Quickways are intended to evolve into some form of automated, guided transit system.

Road improvements, often tied to transit projects, to provide greater capacity in areas experiencing strong growth pressure.

A new regional express system, MetroXpress, making it far faster for people to travel longer distances.

Related infrastructure. The Quickway Proposal is also designed to create significant new parklands and public spaces, as well as bicycle and pedestrian infrastructure.

Figure B.3
Satellite Station
Satellite entrances extend the reach of a rapid transit station. They behave in practice as horizontal elevators.



Road improvements, often tied to transit projects, to provide greater capacity in areas experiencing strong growth pressure.

A new regional express system, MetroXpress, making it far faster for people to travel longer distances.

Related infrastructure. The Quickway Proposal is also designed to create significant new parklands and public spaces, as well as bicycle and pedestrian infrastructure.

4. What are "MetroXpress" routes?

Operations. MetroXpress routes are the secret to the Quickway Proposal's time savings. Most MetroXpress routes begin as "Rapid Bus" routes along key arterials, albeit with improved arterial stations that provide better protection for passengers. Upon entering a Quickway, these routes stop at the first station, then proceed express to their destination, stopping only at "SuperStations," enabling transfers to other MetroXpress routes.

An "overlay" network. MetroXpress routes are based on the "Speedy" network of Curitiba, Brazil, and the CityXpress network of Brisbane, Australia. Such networks significantly reduce travel times *and* operating costs, all while attracting many more riders.

5. What is the migration path for Quickways?

The Quickway strategy is threefold:

1. **Target.** Build Quickway infrastructure where it produces the greatest bang for the buck,
2. **Connect.** Build the connecting pieces over time, and then
3. **Transform.** Upconvert to some form of rail or other automated, guided technology.

The below illustration, from *Preserving Paradise,* explains the central strategy behind developing Quickways.

The key point is that the Quickway Proposal leads to the creation of an effective regional rail system, but with the immediate benefit of a transit system optimized for San Diego.

6. Why "satellite entrances" at some stations?

Familiarity. Anyone who has ever entered a subway station via an escalator or elevator has already used a "satellite entrance"; the surface entryway is actually to a mode (escalator or elevator) that then connects to the actual transit station.

Ridership. Satellite entrances extend the reach of a rapid transit station, increasing access and attracting new riders. To work, they must feature *extremely* high frequencies and *very short* travel times between the satellite entrance and the main station.

Cost vs frequency. Satellite entrances are designed to support a 2-minute frequency or better using paired shuttles (2-3 minutes if only one vehicle is employed, such as at times of low demand). Shuttles are autonomous (driverless) vehicles traveling along a dedicated pathway. Shuttles offer the ability to offer point-to-point super-high frequency service at minimal operating cost.

Figure B.4
University Avenue Proposed Infrastructure (Phase I)
With Quickway infrastructure, it is possible to build separated pieces and use existing roadways to connect them.

7. Where are the first segments to be built?

Results-driven. In the first stage, Quickway segments are built where they will produce the greatest benefit. Since it is impossible to build a rail segment *here* and another *there*—rail lines must be connected or trains cannot make the leap—it makes sense to use "Rapid Buses" to *begin* operations and then upgrade once the pieces are connected. For example, two Quickway segments on University Avenue are about a mile apart, under the centers of Hillcrest and North Park, cutting travel time by a third with greater reliability and a vastly improved customer experience. To build this as rail would require continuous rail tracks connecting the two, doubling or tripling the initial investment and precluding MetroXpress services, which branch off to multiple destinations at a significant travel time and cost savings.

Faster transit = more riders. Why does travel time savings matter so much? Because it is directly linked to ridership—the faster a transit route, the more people it attracts—and to costs. Costs in transit are driven primarily by time; the faster a given service, the cheaper it is to operate and the more trips you can get from a single vehicle. Add to that the increase in fare revenue due to new passengers, and a 1/3 reduction in time may have an oversized impact on that route (and others that connect with it).

Benefit to taxpayers. Taxpayers especially benefit from this "virtuous circle": their investments in transit produce a greater return on investment, subsidy levels go down, and the strategic reasons for creating rapid transit are more successfully met.

8. What Quickway and related infrastructure is being proposed for different communities?

Draft infrastructure and service maps are provided in *Preserving Paradise,* the initial document in the Paradise Project series. It and follow-up papers, as well as our introductory presentation, are available online at

www.slideshare.net/UrbanVisioning.

Appendix C: The Mid-Coast Supportive Projects

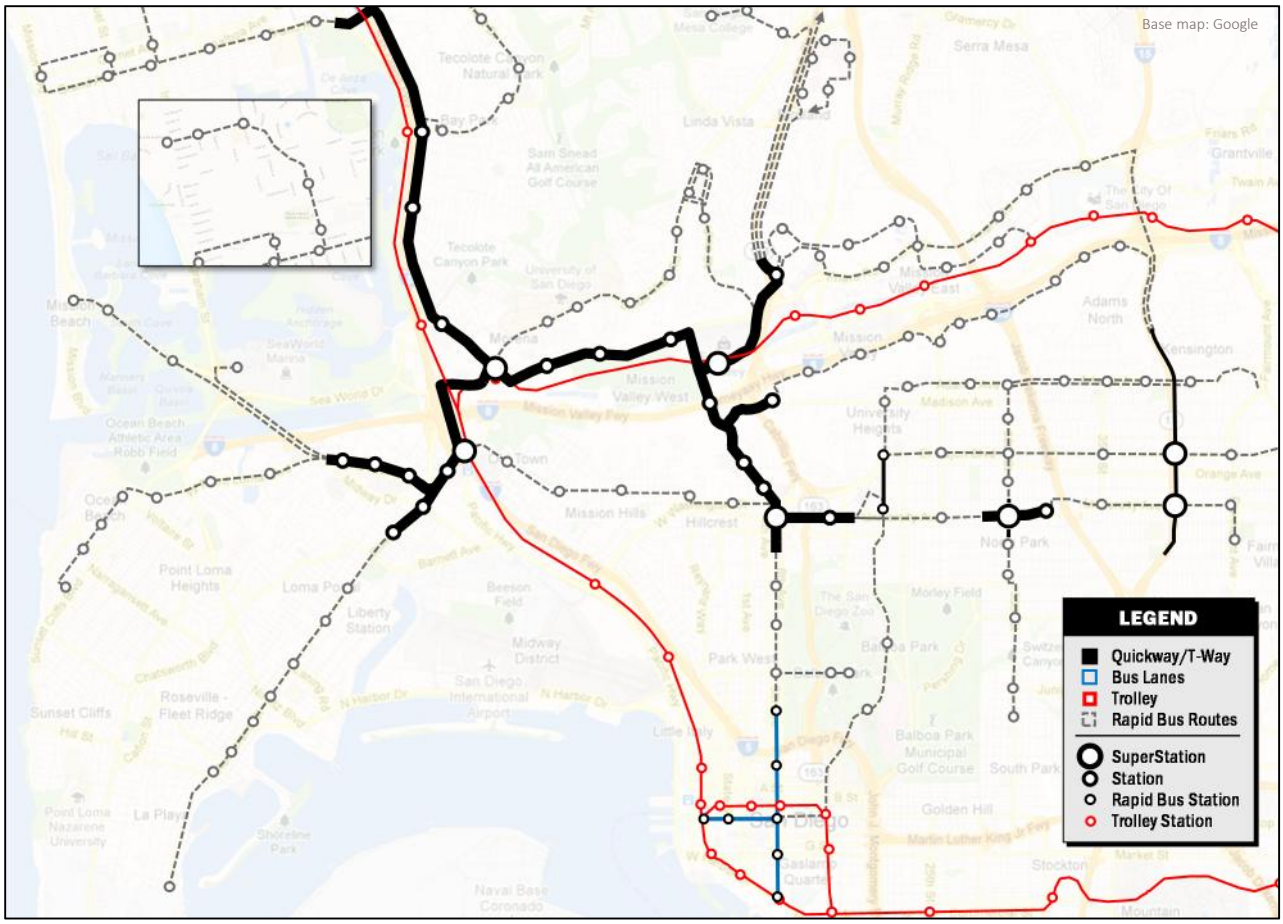


Figure C.1
Mid-Coast Supportive Projects
This map depicts proposed infrastructure and Rapid Bus routes.

The Mid-Coast Supportive Projects are the first set of Quickway projects recommended for implementation. Together, they create notable improvements:

a. **Amplify ridership on the new Mid-Coast line.** They take people to and from the Mid-Coast Light Rail line under development, helping build significant new ridership.

b. **Amplify ridership on existing Trolley lines.** They build off of and support existing Trolley lines, effectively extending their "rapid transit" range. For example, the proposed Uptown Quickway would take Trolley riders from the Fashion Valley Transit Center directly and speedily to jobs at both the UCSD Hillcrest Hospital and the Scripps Mercy Hospital complex, as well as the Sharp Hospital complex, USD, Sea World, Belmont Park, Ocean Beach, and Mesa College.

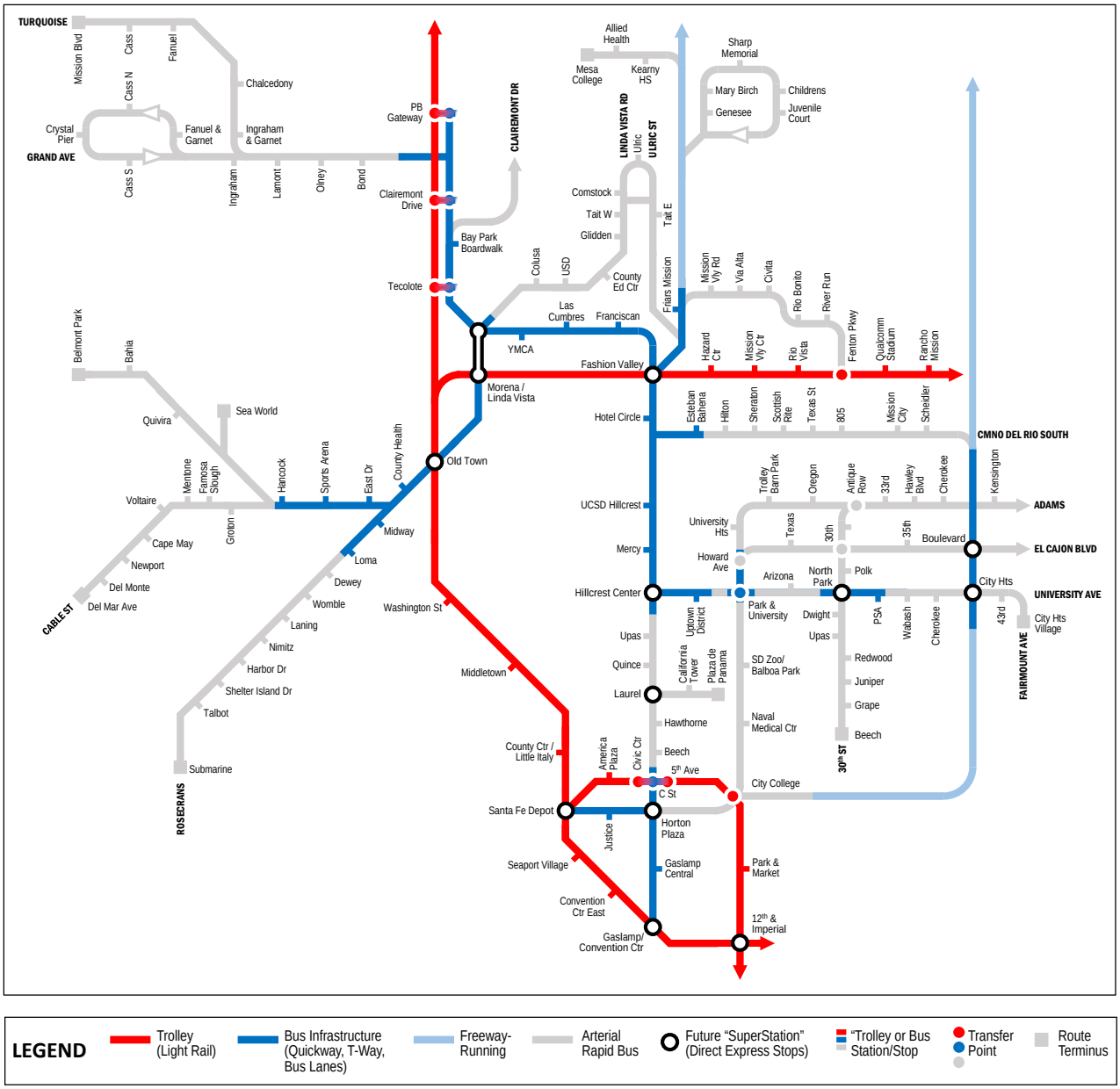
c. **Serve the urban core.** They create an effective and useful rapid transit network in the central zone of the

region. The projects support approximately 10 new Rapid Bus lines that operate faster than the current one on El Cajon Boulevard due to the provision of Quickway and surface transitway infrastructure.

d. Cut travel time. Our analysis suggests an average reduction of travel time by Rapid or Semi-rapid transit to/from locations such as Hillcrest and Fashion Valley of 42-46%, significantly outperforming current plans and making transit competitive with driving for many trips.

e. Mitigate development pressures. They anchor new development by creating infrastructure (stations and rights of way) in areas currently experiencing intensive market demand.

Figure C.2
Mid-Coast Supportive Projects Network Map
An extensive service plan, coupled with major reductions in travel time, serve to significantly increase transit ridership in the core of the region.



Appendix D: Sample Area Coverage & Time Maps

Land area within ¼ mile radius of: Rapid Transit station | Semi-Rapid station within 3 stops of becoming Rapid Transit | Semi-Rapid Transit Station | Streetcar stop

Figure D.1
Mid-City: RTP 2050
While most residents will have access to at least semi-rapid transit, relatively few will have access to true Rapid Transit, and for those traveling to places like Mission Valley or the beach communities, travel times will still be excessive and require multiple transfers.

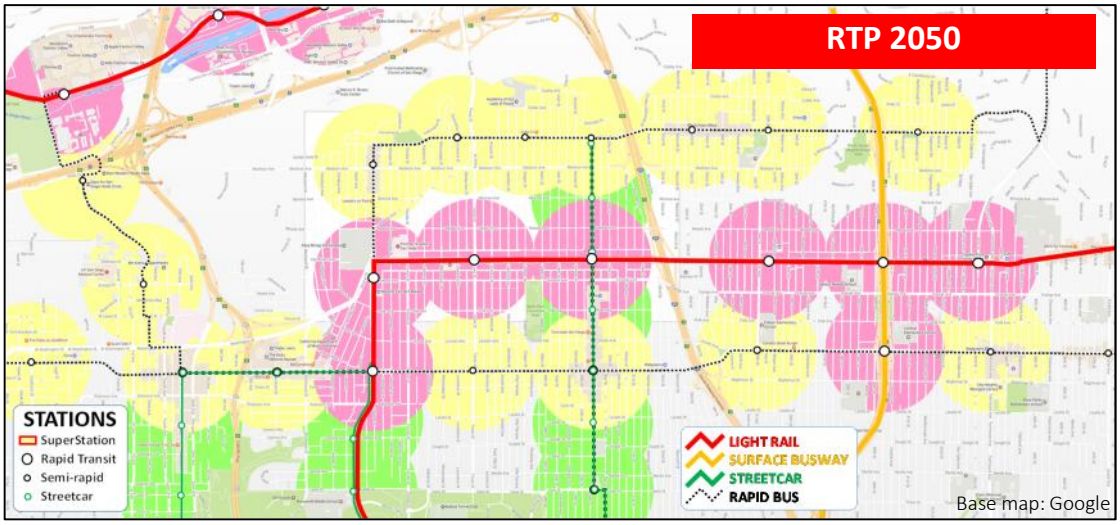


Figure D.2
Mid-City: Quickway 2025
The first phase of Quickway projects creates permanent infrastructure in two vibrant urban centers and links much of North Park and City Heights with Mission Valley and the Trolley. Several Rapid Bus lines become viable, due to the time savings and enhanced customer facilities.

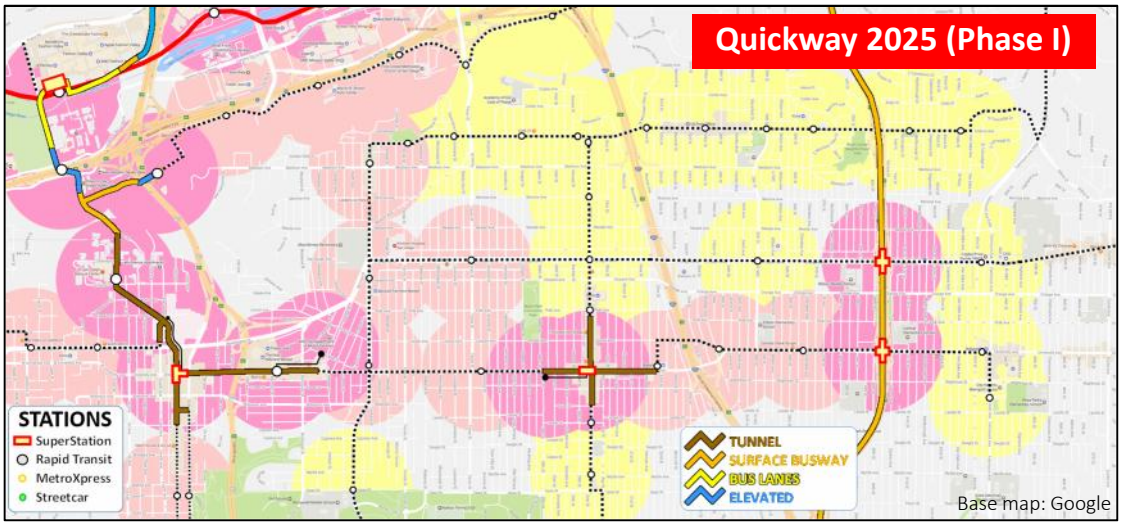
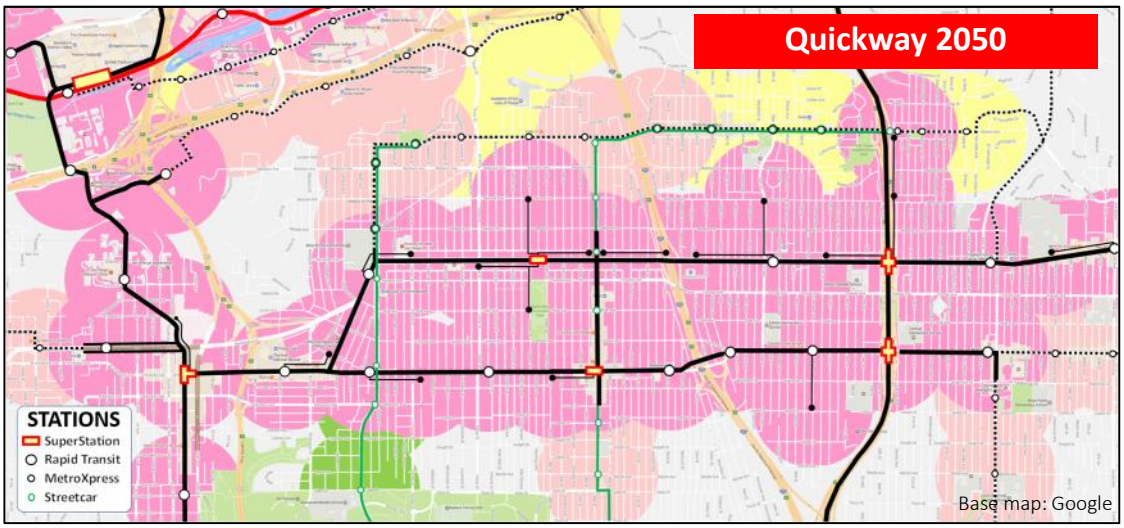


Figure D.3
Mid-City: Quickway 2050
Most residents enjoy access to true Rapid Transit with routes branching to many destinations throughout the region. Movement within these communities is also facilitated. A prime innovation is the use of automated, self-guided shuttles to serve "satellite" entrances.



MISSION VALLEY & KEARNY MESA

Land area within ¼ mile radius of: Rapid Transit station | Semi-Rapid station within 3 stops of becoming Rapid Transit | Semi-Rapid Transit Station | Streetcar stop

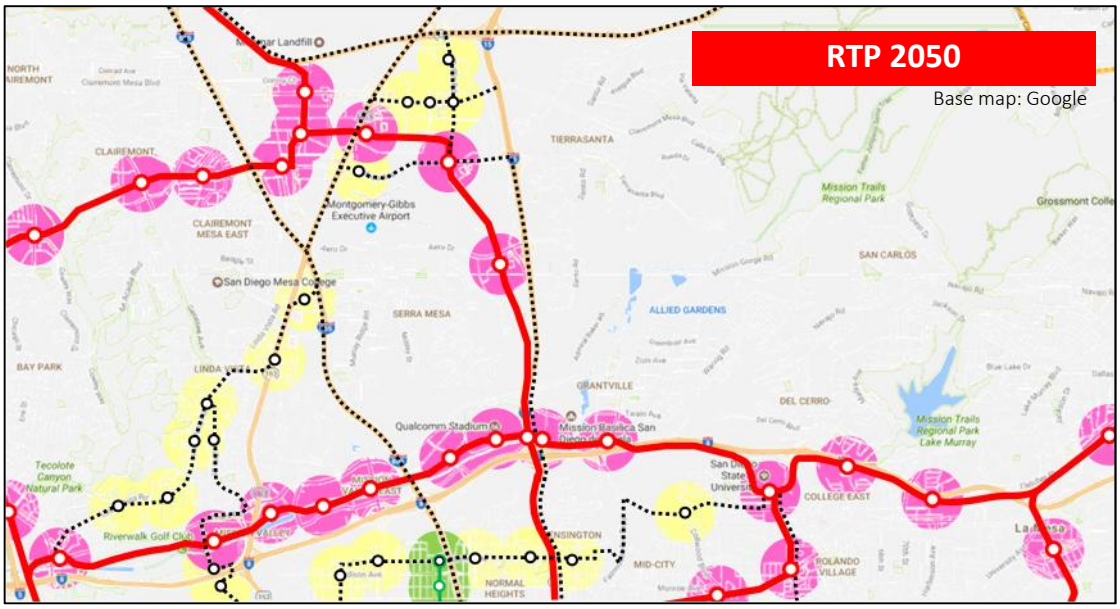


Figure D.4
Mission Valley & Kearny Mesa: RTP 2050
The RTP seems to provide good connectivity to Kearny Mesa, but not necessarily to the bulk of jobs there, most of which will be beyond a comfortable walk from a station; most residents would need to transfer, as well. Mission Valley receives no new infrastructure, even though the Trolley misses most office employment.

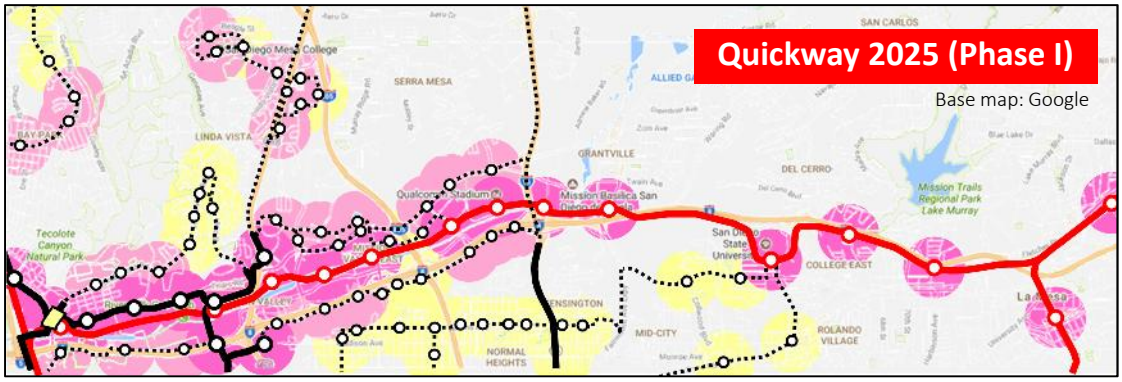


Figure D.5
Mission Valley & Kearny Mesa: Quickway 2025
The first stage of Quickway development amplifies the Trolley's utility to Mission Valley, in addition to targeting Mesa College, Linda Vista, USD, and the Bay Park community.

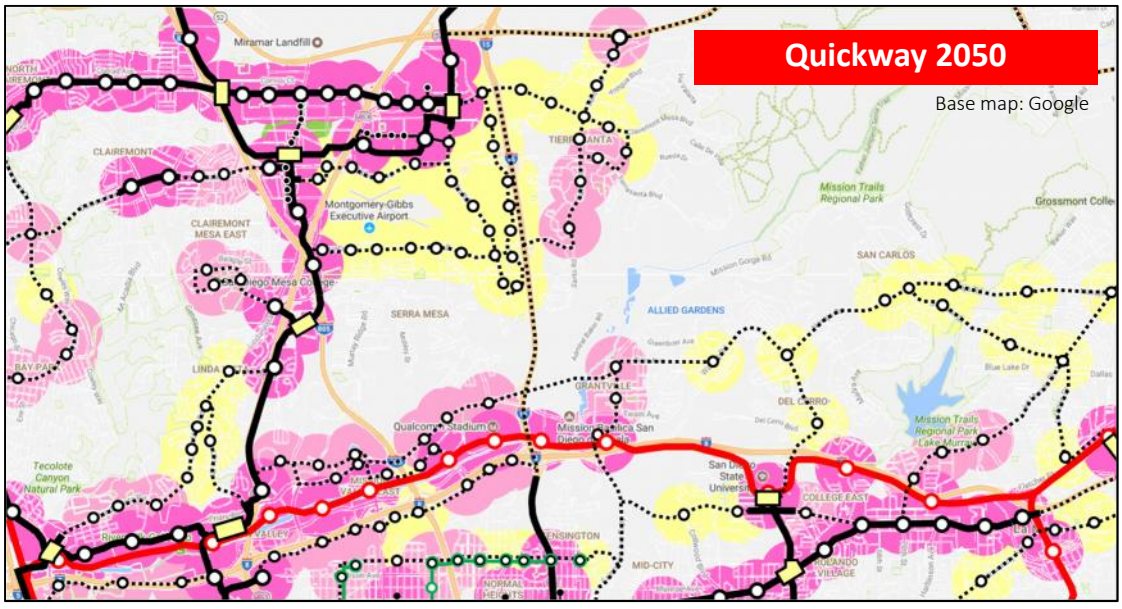


Figure D.6
Mission Valley & Kearny Mesa: Quickway 2050
Virtually all job centers receive extensive coverage in the Quickway Proposal Many more residents have access to the system, and the system takes them directly to many more destinations.

Land area within ¼ mile radius of: Rapid Transit station | Semi-Rapid station within 3 stops of becoming Rapid Transit | Semi-Rapid Transit Station | Streetcar stop

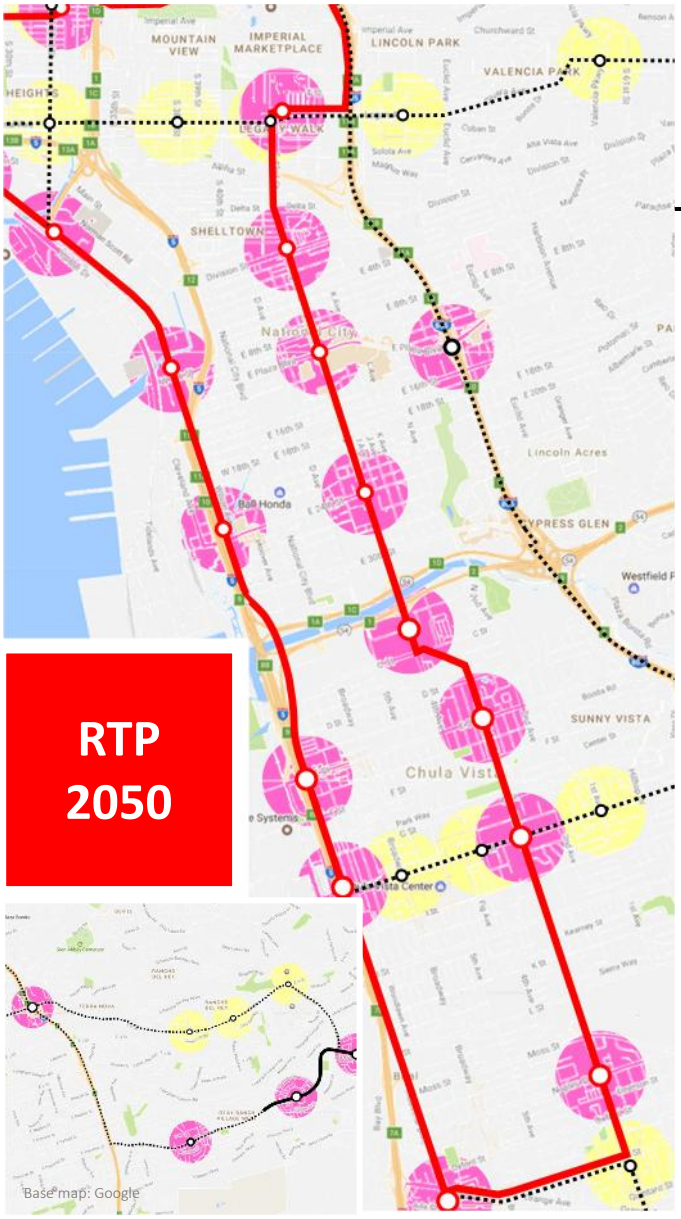


Figure D.7

South Bay: RTP 2050

The Purple Line trolley will help connect the South Bay with employment zones in the north, but will not be very useful for those working west of the alignment (such as downtown or the Bayfront).

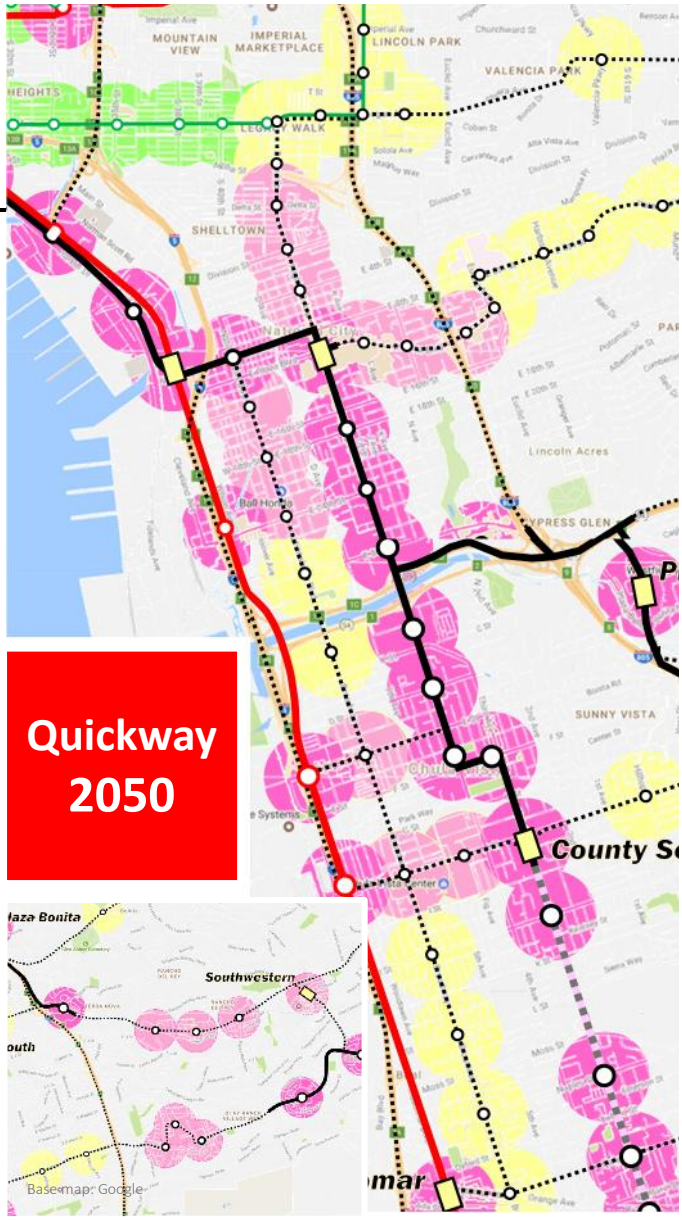


Figure D.8

South Bay: Quickway 2050

The South Bay Quickway provides the travel time benefits of the Purple Line, but with far better connectivity to likely employment destinations and greater accessibility for far more residents.

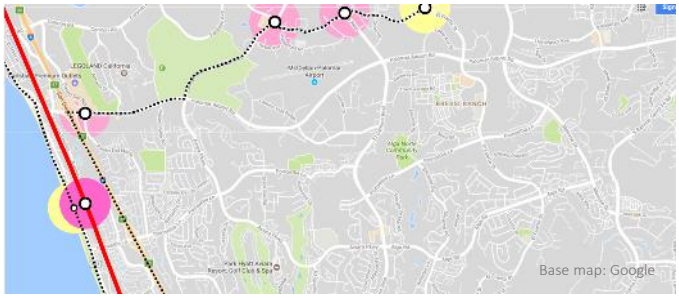


Figure D.9

North County Coastal: RTP 2050

The RTP offers little to North County Coastal

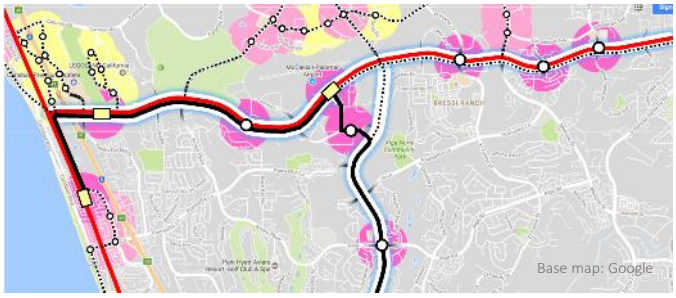


Figure D.10

North County Coastal: Quickway 2050

The Quickway Proposal focuses on delivering people to job sites and other destinations in North County Coastal.

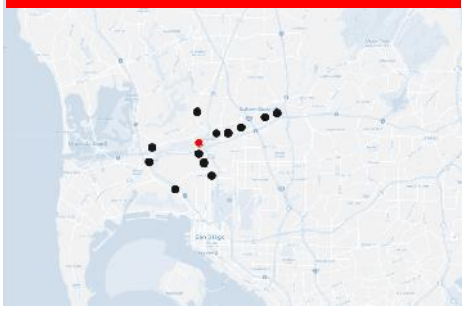
TRAVEL TIME COMPARISONS

PLEASE NOTE: THESE MAPS ARE APPROXIMATE DEPICTIONS. THEY MAY NOT REFLECT ALL PROPOSED "RAPID BUS" ROUTES.

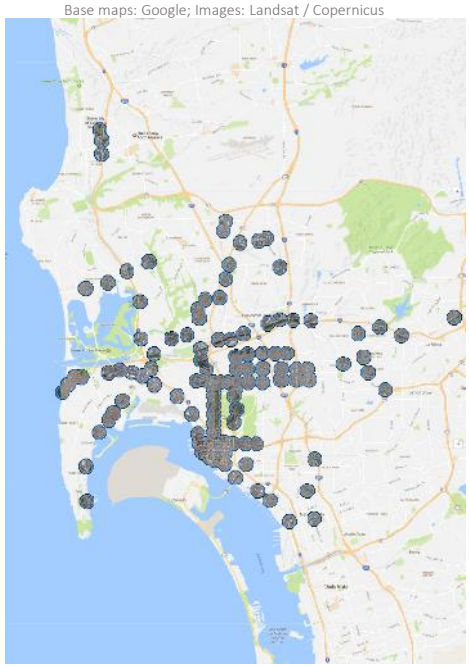
Figures D.11 (upper left), D.12 (upper right), D.13 (lower left), and D.14 (lower right)

With a Quickway network, approximately four times as many stations are within a 30 minute transit trip of Fashion Valley during the AM commute than by the RTP transit plan. Five times as many stations are within 20 minutes, and six times within 10 minutes. The branching MetroXpress network is the secret to wide area coverage.

RTP 2050



Base maps: Google; Images: Landsat / Copernicus



Rapid & Semi-Rapid Transit Stations / Stops within **10 MINUTES** of the Fashion Valley Transit Station (AM Commute)

# of STATIONS:

12 — 72

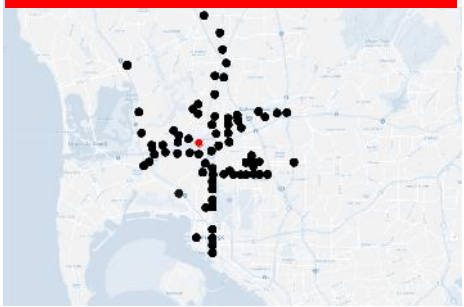
Rapid and Semi-Rapid Transit Stations / Stops within **30 MINUTES** of the Fashion Valley Transit Station

Weekday travel to Fashion Valley for 8:30 am arrival

# of STATIONS:

115 — 458

Quickway 2050



Base maps: Google; Images: Landsat / Copernicus

Mission Valley

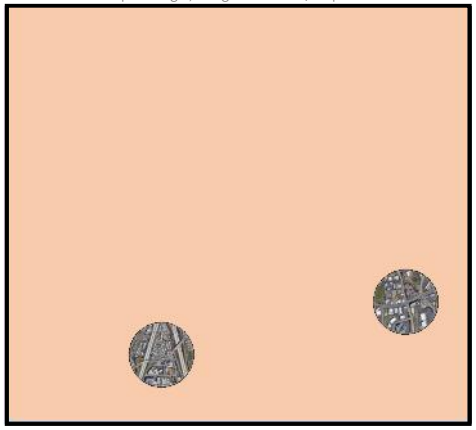
Figures D.15 (left) and D.16 (right)

Base maps: Google; Images: Landsat / Copernicus

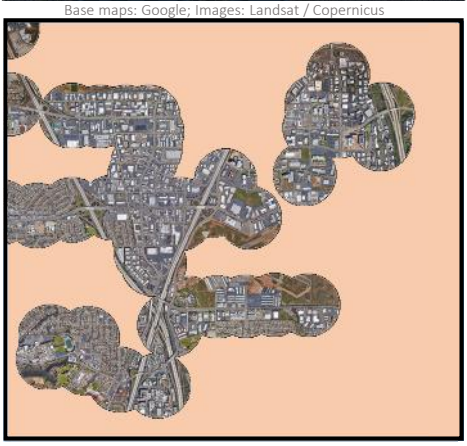
Base maps: Google; Images: Landsat / Copernicus

Kearny Mesa

Figures D.17 (left) and D.18 (right)



Rapid & Semi-Rapid Transit Stations / Stops within **20 MINUTES** of the Fashion Valley Transit Station



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Chapter 1.

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Chapter 2.

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Chapter 4.

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Alan Hoffman, "Uptown 2025: A United Proposal for Implementing the Mayor's Climate Action Plan," presentation to Hillcrest, Mission Hills, and Bankers Hill (September, 2015).

Chapter 5.

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Images of community plazas / town squares were made available by a number of design firms and are printed by permission. These include Goody Clancy (www.goodyclancy.com), Stephanie Bower, Architectural Illustration (www.stephaniebower.com), and Dover Kohl & Partners (www.doverkohl.com).

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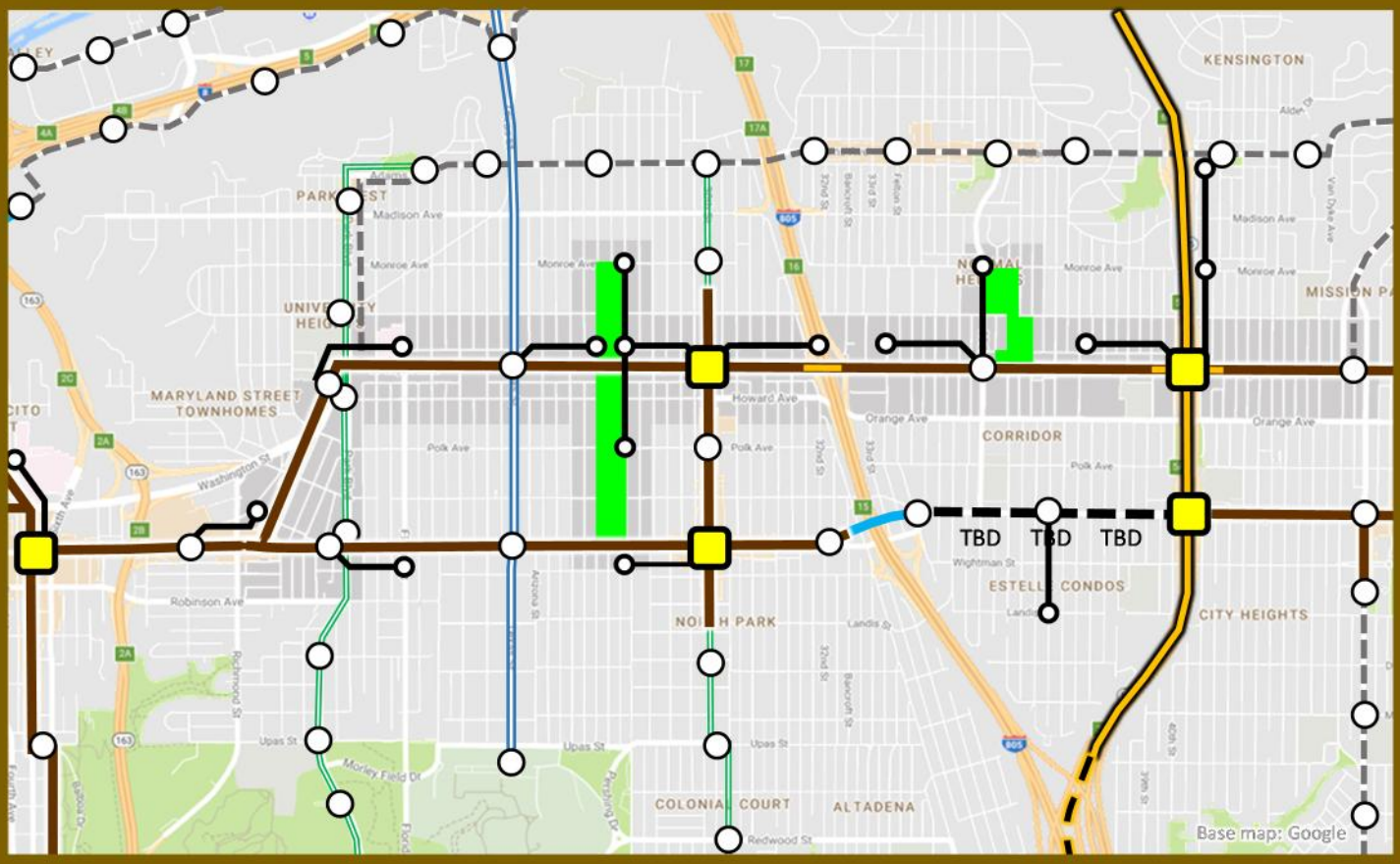
Appendix A.

Data on ridership from the San Diego Association of Governments, 2015 On-board Transit Passenger Survey.

South Bank Parklands, Brisbane, Australia

“This is a remarkable document—insightful, inventive, controversial, and refreshingly grand in scope.”

—from the Foreword by Rob Wellington Quigley, FAIA



Sails to Trails demonstrates how San Diego can transform its historic growth corridor and create amazing new amenities by embracing a far more effective transit strategy. An integrated approach to infrastructure planning can lead to new parklands, new public space, and world-class bicycle, transit, pedestrian, parking, and road infrastructure *within expected resources*. Far from being “pie in the sky,” *Sails to Trails* argues that we need to maximize the return on our investments in infrastructure to create a better future while meeting long-range goals.

Sails to Trails isn’t just about San Diego. Cities everywhere face many of the same challenges of urban transformation. *Sails to Trails* shows how cities can do this through smarter strategies and advanced visioning.

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