National Transit Adaptation Strategy

THE FUTURE OF TRANSPORTATION

Five Scenarios

IFTF
Institute for the Future

SFMTA

ABOUT IFTF

Institute for the Future is the world's leading futures thinking organization. For over 50 years, businesses, governments, and social impact organizations have depended upon IFTF global forecasts, custom research, and foresight training to navigate complex change and develop world-ready strategies. IFTF methodologies and toolsets yield coherent views of transformative possibilities across all sectors that together support a more sustainable future. Institute for the Future is a registered 501(c)(3) nonprofit organization based in Palo Alto, California.

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Introduction

Now is the time to anticipate the future of public transit and work with provocative visions of possibility to take bold action in the present and build resilience in the system.

Just as the pandemic revealed and exacerbated the cascading and intersecting crises of climate change, racial reckonings, and economic and social inequalities in society, it also intensified challenges transit systems were already facing, both in terms of ridership and financing.

One of the key metrics for public transit is ridership. As ridership and revenues decline, public transit agencies need to figure out how to regain trust and grow ridership as they shift from responding to the pandemic to understanding how public transport can contribute to economic recovery, climate action, and social and racial justice. Digitization and the dislocation of work from urban centers have shifted mobility patterns, some permanently. As SFMTA and other transit agencies nationwide look to the future of transportation, they will need to consider a range of social, technological, economic, environmental, and political future forces affecting transportation, ridership, and trust.

By identifying the potential impacts of future forces now, public transit agencies can avoid being blindsided by change and move toward a preferred future. Doing nothing is not an option, as system collapse is within the realm of possibility.

ABOUT THE PROJECT

Institute for the Future (IFTF) collaborated with the San Francisco Municipal Transportation Agency (SFMTA) to develop a National Transit Adaptation Strategy to identify mobility needs and target market segments and to develop messaging to rebuild confidence in public transportation to drive up ridership quickly. As part of this project, IFTF used strategic foresight methods and leveraged decades of research to identify critical forces and build scenarios that expand the range of possibilities regarding the future of transportation. We gained insights into future possibilities and directions of change by interviewing subject matter experts, riders, and potential public transit riders and by conducting workshops with staff and other San Francisco government employees. We also identified barriers and constraints to transformation, which are essential to anticipating change over the next decade. The interviews were conducted with leading experts in transportation, land use, climate, infrastructure, and government. The project also involved an Introduction to Foresight for SFMTA staff to equip them with a working understanding of terms, frameworks, and tools for anticipating risk and envisioning possible futures.

IFTF created several reports for the National Transit Adaptation Strategy project, including

1. a future forces report investigating the major drivers and signals of change demanding strategic responses from public transit agencies;

2. a report that builds on the futures forces report and presents a series of provocative scenarios for public transit agencies; and

3. a final report that merges the future forces and scenario reports, along with tools and frameworks for public transit agencies to use in strategy discussions on the demands and realities of the next decade.

About the Project (cont.)

This stand-alone scenario report presents a series of provocative, internally consistent future possibilities. Each scenario has a strong throughline that optimizes a particular set of values as a way to play out directions for the future of transportation. These values—profit/monetization, human-centeredness, resilience, equity, and regeneration—guide different ways to transform transportation and public transit agencies. These values were synthesized from expert interviews and future-forces research and chosen for their range and transformative potential.

The scenarios are designed to provoke conversation and identify insights that result in better-informed decisions. By considering a wide range of future possibilities—each with its own pathway toward transformation, set of implications, and trade-offs—transit agencies can prepare to face the future.

ABOUT SCENARIOS

The scenarios in this report are stories about potential futures a decade out from now. They illustrate a holistic world and are composed of multiple forecasts and drivers. They are based on explicit and internally consistent assumptions about the future forces driving change.

These public transportation scenarios are not predictions, nor are they necessarily preferred futures. IFTF uses scenarios to dramatize different and plausible trajectories of change. Although these futures are often radically different from our current world, they are generated from signals of change that exist in the present. The future of transportation and public transit systems will likely contain elements and trends from each of these five scenarios.

SCENARIO STRUCTURE

This report describes five possible futures. Each scenario starts with a provocative visual representation of a scene or artifact from the future depicted in the scenario. Each includes a high-level summary identifying the values and dynamic future forces—social, technological, economic, environmental, and political—defining the primary throughline of the scenario. The summary is followed by the main narrative of the scenario, in which the future world and transformations of transportation and public transit agencies come to life. Next, each scenario drills down into five impact zones:

MARKETS AND RIDERS | Impacts on different groups of riders as defined by their distinct needs and patterns of mobility and movement.

SERVICES | Impacts on the portfolio of products, services, and experiences and their distinct value proposition, design, and delivery.

DECISION-MAKING | Impacts on the decision-making process regarding transit choices, including price, convenience, seamless connections, and trade-offs with other transportation choices.

RISKS | Impacts on the cost-benefit calculation of risk (actual and perceived), ranging from personal safety and health to planetary and climate risks.

FUNDING | Impacts on funding streams, financial incentives, and the use of public and private assets.

Finally, the scenarios end with a summary statement on “winners” and “losers”—which individuals, groups, or entities have positions of power and strategic advantages in this future and which are left behind or find themselves at a strategic disadvantage.

HOW TO ENGAGE WITH SCENARIOS

The scenarios in this report are stories about potential futures a decade out from now. They illustrate a holistic world and are composed of multiple forecasts, drivers, and signals that you have seen earlier in this report. They are based on explicit and internally consistent assumptions about the future forces driving change.

Scenarios are not predictions, nor are they necessarily preferred futures. Avoid judging the scenarios or identifying your favorite. Imagine each scenario as though it represents the reality of the present. Place yourself into the world described. Get specific. Think about how old you will be in ten years. What are your feelings or reactions to everyday life in this world? How do you spend your time and move through your day? How does this future affect you, your family, your workplace, your industry, and your country? After considering the complete set of scenarios and immersing yourself in these worlds, move to more critical and strategic insights. Ask yourself:

- What aspects of these scenarios are most plausible to you? Which are least plausible? Why?
- In which scenario(s) are your city and its public transit agencies best positioned for success?
- Which scenarios place your city and its public transit agencies at a strategic disadvantage?
- What strategies or actions can your city and public transit agencies implement to move toward a preferred future or avoid a particular scenario?

CONNECTING THE FUTURE TO THE PRESENT

All useful foresight ties into the present. Use these scenarios to stimulate imagination and consider a broad range of future possibilities. They also are a resource for working with stakeholders to identify additional insights within the impact zones of markets, services, decision-making, risks, and funding and to anticipate consequences for your city and public transit agency. Working with scenarios requires the discipline of systematically considering each future possibility, enabling you to prepare to navigate the disruptions—and seize the opportunities—of the next decade.

SCENARIO 1

Shifting to Market-Based Mobility Systems

From Public Good to Private Great

SCENARIO 1

Imagine the future of public transit as it finds financial sustainability through market- and profit-driven approaches. A focus on revenue and profit generation remains sharp as cities respond to the re-prioritization of work to drive economic recovery, expanding automation, smart environments, the reclamation of streets from cars, and increased demand for transit-friendly housing.

Public transit in most U.S. cities never recovered from the impact of COVID-19 and the widespread shift to remote work in the 2020s.

More accurately, the 20th-century paradigm of public transit never recovered. In 2032, nearly a third of American cities have drastically reduced or shuttered almost all public transit options, leaving an empty shell of what was there before. Another third have tried to hold on to previous service levels, although ridership continues to vanish, creating what is known as a "ghost train" system. The remaining third have radically rethought the whole notion of public transit—from revenue models to staffing to technology and infrastructure. In fact, for these cities, the nomenclature of "public transit system" is outdated and inaccurate. The market-based mobility systems (MBMS) implemented in major cities such as Dallas, Atlanta, and San Francisco in the mid to late 2020s have redefined what public transit can be and is likely to become elsewhere.

Market-based, profit-driven approaches have done more than make public transit financially sustainable in these cities. Their transit agencies have become a vital revenue-generating business, replacing much of the income from parking tickets and fees lost due to hybrid work in the 2020s. This hybrid workforce led to fewer cars on the road at a time, reducing the need for garages and parking lots—and the space that once stored cars has been transformed into much-needed housing, which bolstered the still-growing 15-minute city design movement. For-profit public transit now meets transportation needs, generates revenue, and satisfies the anti-private-car "take back the streets" movements that have spread around the world.

A decade ago, public transportation planning rarely had such an undistracted focus, but the emphasis on revenue and profit sharpened agency thinking and creativity to a razor's edge. Where could costs be reduced? Where could nontraditional revenue streams be generated? What could be done to delight riders and make public transportation synonymous with luxury and style, not just efficiency and reliability? Many people were initially skeptical, just as they were about electric cars before Tesla made them sexy and Ford made them ubiquitous.

Impact Zones

MARKETS AND RIDERS

The profile of the typical public transportation user has undergone a profound transformation.

In some cities, high-end mobility services have become an environmentally sound status symbol rather than simply the means to move from place to place for those without other options. Cutting-edge entertainment options, premium upgrades, loyalty and incentive programs, integration with personal apps, and a host of customized services have made the car-less life in big cities a symbol of wealth and freedom.

Discount options are available for those who don't have the desire—or the funds—to indulge in the array of paid services offered. Some people shy away from sharing their data with the system and pay more for data-blind options. Although there may be required advertisement viewing, more tightly packed train cars, and longer routes, discount riders are often reminded that they should be happy to have a transit system at all.

Riding public transit is no longer synonymous with environmental sacrifice or the drudgery aesthetics of the working poor. Advocates argue that luxury riders and corporate partners keep the whole system afloat and should be welcomed rather than vilified. They are afforded prestige and opportunities to network with others of their own social and financial station. Corporate sponsors have extended engagement windows to shape the attention and desires of a prime marketing audience.

SERVICES

Each node in the market-based mobility system has designed services and add-on options for high-end and discount riders.

Customization, automation, and anticipatory services are key. Many frequent users allow data sharing with the system to help predict their movement and orchestrate the best transportation options on a minute-by-minute basis.

A host of personal preference- and wellness-oriented services are offered as well. Do you prefer to ride with only those of your gender identification? Do you need a calming car? Do you want to socialize, or party? Do you want your technology to be disabled or enhanced while you ride? Did your doctor prescribe a nature outing? These personal preferences, desires, and needs are constantly logged and integrated into the system to enhance rider experience and open up untapped revenue streams.

Impact Zones

DECISION-MAKING

The shift to market-based solutionism required a profound rethink of every aspect of the transportation system.

In the 2020s, most career leaders and officials in public transportation were not up to the task. So, with little to lose, many cities began by clearing out or reassigning long-time employees, reducing local unions' power. This freed up finances to hire a new breed of design strategists, software engineers, innovation experts, and marketers.

With this approach, it was not surprising to see the hard push toward automation. Dallas, for example, saw a 60% reduction in its public transportation workforce. Innovative public-private partnerships accelerated infrastructure creation. Even though profits and rider data had to be shared among companies, cities still usually came out financially better than they had with a wholly public system.

RISKS

Profit-first thinking has certainly left some behind, and there are frequent protests and calls for change.

A perfect system that serves everyone efficiently and affordably was not sustainable—the story of the 2020s proved that. But although this new market-based mobility systems model has not reached every neighborhood and may have cost the jobs of many workers, a viable public transportation system is still available for a large portion of the population. And with new revenue coming in, advocates can assure residents that an expansion to underserved neighborhoods and populations is on the horizon.

The loss of city public transportation jobs affected thousands, and those who remained employed had to be retrained or reassigned. The blowback from layoffs and disruptions had to be addressed. The hollowing out of a public asset and the push for profitable business models created inequities in access and service, causing further social tension.

Impact Zones

FUNDING

Splashy bells and whistles—such as augmented reality entertainment and experiences, tiered services, and exclusive routes—have been marketed to riders. Still, the real innovation has been in the previously untapped transportation infrastructure opportunities.

In the 2020s, many transit agencies began to evolve into "rail plus property" systems, such as those pioneered in Hong Kong. This process turned transit agencies into housing developers and property managers, which opened the door to a host of innovations in shifting public assets into new revenue sources.

With the strong anti-car policies San Francisco implemented in the 2020s, a wealth of exploitable public space opened up in former parking lots and car-centric infrastructure. One of the unique innovations is the city's collaboration with p2pBnB, a new app-based room-renting platform. A resident/rider can receive an investment from p2pBnB, or in some cases from the city, for a down payment on an "above-train housing unit." This financial investment makes these homes affordable to many people previously priced out of the market. In exchange, residents share their home equity with p2pBnB and are required to lease one of their bedrooms to a public transit customer. This win-win-win innovation provides the opportunity for homeownership to those previously unable to afford it, an inventory of conveniently located bedrooms for frequent transit users, and a sizable revenue stream for both p2pBnB and the city.

Summary

Focusing on profit turns attention away from money-losing routes, services, and investments. It shifts focus to high-margin services and sometimes draconian cost-cutting measures. Running a public transit system for profit leaves behind the poor and marginalized. Barring tempering factors, this approach likely exacerbates systemic racism and worker injustice while favoring corporate partners and wealthy users. We've seen this happen in medicine, education, and other domains that were once public goods rather than profit-centered businesses. Services are excellent for those who can afford them, and it is argued that a private, profit-focused system is better than no public transportation system.

SCENARIO 2

Pioneering a New Civic Norm

From Car-Centric to People-First

SCENARIO 2

What if transportation policy could put people first and disincentivize car ownership? Imagine a future where micro-mobility takes off at the neighborhood level, the new metric of success is livability, and where people can access what they need for living: transportation, food, work, culture, art, and entertainment. This future emerges as cities look for ways to tackle the big problems of deteriorating living conditions, increasing inflation and cost of living, and the persistent rise of houselessness.

The 2020s saw living conditions in major cities deteriorate for all but the wealthy. Cost-of-living increases, precarious work, rising inflation, and other systemic factors contributed to a significant rise in houselessness across the nation and California, especially in San Francisco and Los Angeles.

Politicians running on aggressive "people-first" platforms swept into power in the late 2020s. Having dramatically improved its subway and light rail systems in preparation for the 2028 Olympics, Los Angeles officials invested in robust micromobility systems at the neighborhood level. This plan organized adjacent neighborhoods into zones within which residents could move easily. It wasn't the 15-minute city model, in which all services and living needs could be accessed within a walkable radius, but it was as close as a megacity like Los Angeles could get. Access to fresh food and produce, open green space, and vital cultural infrastructure such as churches, libraries, and art spaces became part of the livability criteria that informed policy decisions. LA Metro implemented a seamless fare system that holistically and dynamically assesses the cost of a given trip across a combination of public and private transportation services, including rail, bus, ride-share, scooters, bikes, and shuttles. Furthermore, public transportation is free for those below a certain income threshold and discounted for many others in need.

LA Metro created a successful trip-planning app that allows riders to map their desired journey based on efficiency, vehicle preference, and cost. In addition to improving the efficiency of public transit, Los Angeles disincentivized private car ownership by implementing an annual car-ownership tax, and limited use of private cars to certain times of the day, enforced by hefty fees. Not everyone is happy that their personal transportation choices are constrained, especially the ultrawealthy. Still, most working Angelinos are thrilled to see fewer cars on the roads and more efficient and affordable options for getting around the city.

Impact Zones

MARKETS AND RIDERS

The archetypes of a transit user in Los Angeles have significantly expanded.

Once a city where the vast majority of ridership was made up of the poor and working classes and few car owners ever opted to use the system, Los Angeles now has the most socioeconomically diverse ridership in the country. Tourists ride transit in the hopes of catching sight of celebrities.

This ridership expansion was catalyzed by "The Challenge," a multibillion-dollar moonshot campaign initiated by LA Metro wherein all city residents were invited to limit their car trips for a month to under three per week. Everyone who chose to participate received an account that enabled them to see the benefits of their transit choices using metrics such as carbon reduction and cost savings. Over 2 million people participated in the campaign, and over 20% opted to go car-free after the month ended. Though many people still own at least one car, they do so primarily for the ability to take road trips outside of the city. They now conduct most of their daily activities by walking or using local transit systems.

SERVICES

LA Metro's focus on livability and access helped neighborhoods thrive and become more self-sufficient, with more local mobility choice as well as customizable trip planning.

Transit experiences are now seamless. Metro partnered with Giga (the big-data-driven predictive simulation giant that rose to dominance in the last decade) to design a sleek app that allows riders to build their itinerary according to their needs and preferences. The user-friendly platform provides real-time itinerary updates that will enable them to make instant changes to their trip and travel as efficiently as possible—as long as they share their data.

At the end of "The Challenge," those with eligible vehicles had the option to sell their car to LA Metro, agreeing that they could not register a new car in Los Angeles County for two years. LA Metro used these cars to form a fleet for its car rental service. This service was designed to help solve transit's first mile/last mile problem and accommodate those wanting to take longer trips within Southern California. While buses continue to make up the bulk of the transit system, rapid shuttles have been added to facilitate commutes between neighborhoods that are not well connected by other transit services.

Impact Zones

DECISION-MAKING

LA Metro brought its vision of livability and access to fruition by working with other municipal bodies.

To effectively adapt this framework, Los Angeles County embraced a vision of interdepartmental coalitions and collaborations. This approach allowed departments governing housing policy, transit, commerce, and health to pool financial, intellectual, and creative resources to apply a holistic multisolving approach to city planning and design comprehensive solutions to pressing issues.

This new approach to policy helped create thriving neighborhoods bolstered by small businesses. To develop community infrastructure, Los Angeles had to design policies that favored small business and local entrepreneurship over global corporations. This created tension between the city and large bricks-and-mortar retailers, which consequently pulled their operations out of the city, taking jobs and tax revenue along with them. This trade-off was consistent with Los Angeles' values of people first, and boosters of the program argued that big-box retailers were a dying breed anyway. They calculated that a better transit system would deliver net gains over time.

RISKS

Los Angeles became a global leader in people-first urban planning, bolstered by its open and experiment-friendly culture.

These moves, however, widened the political divide between the wealthy and the nonwealthy. While most are happy with Los Angeles' shift toward accessibility, some see it infringing on their liberties. Car ownership has been cultivated as a symbol of freedom in the U.S., especially in Southern California, since the early 20th century. The county's pivot left many feeling slighted, leading to increased political polarization regarding the county's decisions. Leftists and the working and middle classes strongly approve of the county's people-first approach and are grateful for how it has improved their lives. But the wealthy feel underrepresented in the county's approach because they don't experience the benefits on a daily basis. Car-lovers feel attacked as elements of their lifestyle, such as owning multiple cars, now cost them additional money in fees and taxes. However, some big celebrities joined "The Challenge" and celebrated the resulting change, believing that reducing car use fosters the spirit of individuality and inclusiveness. Others chose to relocate outside of Los Angeles to avoid paying additional taxes.

Impact Zones

FUNDING

While Los Angeles' free ridership program helped make the system more accessible and equitable, the policy resulted in over 65% of users riding for free.

Fare revenue now makes up only about 8% of the transit system's overall operating budget. To address funding shortfalls and increasing pressure from the public to discontinue its contract with LAPD and the Los Angeles sheriff's office, LA Metro significantly reduced the number of police officers patrolling LA's transit services and repurposed these funds for basic operational costs.

While the social and environmental impacts of the county's new approach to livability and accessibility are generally positive, fewer cars on the road have resulted in a substantial decrease in revenue generated from parking fees, fines, and moving violations. To compensate for this and keep incentives aligned, Los Angeles County has imposed "excessive lifestyle" fees that apply to choices such as owning multiple cars, which are now taxed.

Summary

A people-first, subsidized transit system requires a radical rethinking of policy and funding priorities. Any money savings from decreasing policing and other services have met with resistance. Temporary increases in crime (or even the perception of an increase in crime) have put political pressure on decision-makers to not trade public safety for cost savings. In the end, a publicly subsidized system has won the day because most of the public prioritized access and equity to achieve a shift in car centricity and new civic norms. The classic philosophical debates of individual freedom vs. collective responsibility continue to rage, but a highly functional, widely accessible transit system has dramatically changed behavior and attitudes.

SCENARIO 3

Centering Resilience

Social Infrastructure for All

SCENARIO 3

Imagine public transit and transportation as a lever for building resilience and future-readiness. After a decade of extreme weather, social instability, and the unaffordability of everyday life, cities embrace the principles of equity, sustainability, and foresight to respond to calls for justice. Cities amplify the idea of "social infrastructure for all," making public education, public safety, public health, public space, and public transportation universally available to all. Starting with universal basic transportation benefits, a new road to resilience comes into view where the city works better for all.

In 2032, resilience is the name of the game in California. In the wake of a devastating global pandemic and cascading climate disasters, policymaking is now guided by principles of equity, sustainability, and foresight.

These guiding principles enhance a city's ability to withstand systemic crises. Environmental sustainability cannot be achieved without social cohesion and trust in collective institutions. The "Resilience Revolution" is reversing decades of privatization and policies that led to unbalanced wealth and power accumulation. Now, social infrastructure is viewed as an asset that should be universally available to all residents. In 2022, it took at least five minimum wage jobs to afford rent in the largest U.S. cities; city living was impossible for most. The universal basic assets (UBA) program implemented in the mid-2020s was a direct response to the concentration of private wealth and the power of corporations. It constituted an attempt to make city living possible for working people.

Facing mounting political pressure from ongoing heat waves, drought, and fires that exacerbated social unrest, California was the first state in the nation to design and adopt a bipartisan 21st-century social safety net, which includes mandates for the creation of more social infrastructure for public education, public safety, public spaces, health care and, importantly, public transportation. This resilience-focused approach recognizes public transportation as an important aspect of economic security. Not only does accessible transit connect people socially or for job access, but it also minimizes the need to own a car, an expensive private asset that declines in value from the moment of purchase and has significant negative impacts on the environment, health, and livability.

Investments in critical social infrastructure helped build a more resilient city. Leveraging this infrastructure to reduce economic precarity enabled the city to work better for almost everyone. The first project involved providing universal basic transportation benefits (UBT) to the most financially insecure, expanding transit routes to serve all major neighborhood centers, not just downtown, and providing students with deep discounts or free rides. Accessibility enhancements also helped support the first-mile and last-mile needs of seniors and people with disabilities.

Impact Zones

MARKETS AND RIDERS

Under the UBT mandate, students, seniors, people with disabilities, and riders making less than a living wage automatically receive a free mobility wallet every year, which provides access to a mix of transportation and delivery services.

In addition, qualifying city dwellers have guaranteed access to friends, family, events, health appointments, schools, jobs, and entertainment throughout the city. The UBT mandate prioritizes riders living in food deserts or far from essential services. As daily vehicle miles decrease from almost 6 million per year in the early 2020s to less than 3 million in 2032, people in these regions spend less on cars and gas. The percentage of income spent on transportation by financially insecure riders has decreased from 40% in 2022 to 19% in 2032.

SERVICES

A top goal for UBT is to ensure that no one has to travel more than 30 minutes to reach a health appointment.

To meet this goal, public transit-dense cities are constantly optimizing routes based on ridership levels, commonly referred to as dynamic scheduling.

The first- and last-mile city partnerships encouraged previously reluctant riders to try the new and improved system. Before, many would-be riders opted only to pay for a ride from point A to point B rather than for a full ride, including first- or last-mile options.

While first- and last-mile stops are not currently available at every stop, a pilot is being tested to enable people to request a last-mile ride by entering their bus number and final destination on their personal device or an onboard touch screen. The first- and last-mile request data is also used to develop route optimization.

UBT is resulting in more foot traffic and has prompted the transformation of transit stops into community centers and parks, increasing employment, public engagement, and public safety.

While private services have had to compete with improved public options, they are not feeling the loss initially anticipated because their services are so frequently being used to support first- and last-mile rides.

Impact Zones

DECISION-MAKING

The decision to drive or ride transit has never been easier. With free or discounted rides, optimized routes, dynamic schedules, and transit-only lanes, public transportation performs better against ride-hailing's speed, cost, and reliability.

Community events at these organic gathering spaces have strengthened social ties and community resilience. In most areas, the highly connected routes between neighborhoods have made taking the bus or train more viable than driving. Public transportation is almost always the best option unless you're traveling to another state.

Private transportation services have had to re-evaluate their priorities. They now focus on niche services for tourists and entertainment-based travel experiences. The renewed culture of care in California, especially the San Francisco Bay Area, rendered exploitative, value-extracting systems socially unacceptable. Private transportation companies have had to embrace the commitment to serving people over profits. The pivot was rapid, with value-aligned Gen Z and Millennials in leadership positions.

RISKS

The exponential improvement in service routes and free or low-cost fares means that many more people are taking public transportation.

Even with dynamic scheduling in operation, crowding on public transportation is an issue. During certain peak hours, people traveling with children, those with disabilities, and seniors are less inclined to use public transit. A systems approach must be used to assess how housing, work conditions and schedules, education, and environmental impacts intersect and to determine where solutions can be found. Many "win-win" solutions are still being tested and implemented, and for the time being, there are fluctuations in ridership and use of private options, but leaders are hopeful that they will get these kinks worked out.

Impact Zones

FUNDING

The funding for UBT comes from local taxes, municipal governments, local companies, and state and federal governments.

In dense urban areas, there are higher fees for street parking, garage parking, and traffic tickets. Employers receive tax breaks when they buy a green UBT pass for their employees. The top 5% of wealth holders in California pay a 0.5% Universal Basic Living Tax that funds basic transportation for all Californians. Measures to expand to other public services—with direct transit routes—such as universal pre-k and public parks are also in the works. Additionally, all companies that offer ride-hailing or personal transportation pay a 10% tax that helps fund public transportation. Sustained funding is provided through the national Universal Basic Assets Act, passed in the mid-2020s.

Summary

Policymaking through a community-first, resilience-based lens allows governments to operate and plan for the long term. Citizens feel supported by local and state governments because they see how policy changes prioritize their needs. These policies have contributed to a better sense of community in cities where public transportation is most vibrant, from optimized transit services to prioritizing spaces for pedestrians over private cars. UBT has raised the bar for public institutions, and more demands are being placed on them. Sometimes these demands lead to civic engagement and sometimes to frustration. People who choose to own private cars are paying much more than they used to, which hurts groups that need personal vehicles. Although initially, this felt like a loss, the high cost of owning a car in California has led to widespread co-ownership—some vehicles have up to 15 different owners!

SCENARIO 4

Prioritizing Social Cohesion

Putting All Neighborhoods on the Map

What if public transit systems expanded their definition of riders beyond the commuter? What would it mean for you and your neighborhood? After years of falling short of their aspirations for diversity and inclusion, cities look for ways to address geographic segregation, inequality, and violence explicitly and achieve that elusive state of vibrancy. Vibrancy is the truest measure of a city's health and well-being. By reimagining public transit as a purveyor of social cohesion, all riders—and therefore all neighborhoods—could now be on the map and collectively bring the city to life.

SCENARIO 4

No one thought it was possible to challenge the cable car's status as San Francisco's iconic transportation system, but that's precisely what Discovery Cars are doing today.

Maybe that's because they're so conspicuous. They look different from similar light rail trains because they're covered in paintings by local artists. Each one is unique. They also move differently—much slower and steadier. Because of this, they've changed the visual landscape of the city. From Coit Tower, you can watch as these mobile murals slowly weave circles in and around the city.

What's genuinely distinctive about Discovery Cars is their intention. While most public transit is designed with value, efficiency, and convenience in mind, Discovery Cars were intended explicitly as a way of promoting social cohesion in the city and combating the geographical segregation, inequality, and violence that in the 2020s was undermining San Francisco's aspirations to be a bastion of diversity and equality.

Designed to be a sort of third space on wheels, the interiors have dynamic seating layouts that can be rearranged for various purposes. They are decorated intensively by local artists, making each one its own attraction. Early media coverage drew connections to Burning Man's aesthetic and intention. The cars move slowly on routes designed to connect neighborhoods that previously had little connection. Their stops prioritize public spaces, a deliberate move meant to entice riders to hop off if they see a park, library, or a shop that looks interesting. Discovery Cars are public spaces that move people!

Impact Zones

MARKETS AND RIDERS

These innovative cars make for a better experience for riders, who get a more pleasant trip, regardless of destination.

They also provide customization for riders, while focusing on social cohesion makes for additional personalization. For instance, Discovery Cars employ a smart-pass system that aims to reduce disparities and increase cohesion among riders of different demographics. The system nudges people to ride with passengers of different ages and explore new city areas. As a result, different passengers have different experiences. For instance, if you're a student, your pass won't open a car door if there are already many students inside; instead, your pass will allow you to enter a car filled with seniors and net you credits you can use in local stores. You can also earn credits for riding at specific times, trying new routes, and getting off to explore areas you don't usually visit. It is a fun game to master if you have the time and motivation.

SERVICES

Focusing on social cohesion opens up a new set of imperatives for the system to pursue that don't just focus on getting people from one place to another quickly and efficiently.

For instance, transit employees and designers see themselves as providers of social connection and recreation and focus on "programming" the transit cars like museum exhibits.

Over time, the imperatives for social cohesion expanded services even further. Understanding that meal delivery and online shopping companies are also logistics and transportation companies, Discovery Cars began to municipalize delivery services to encourage more people to shop local and take public transit to do it. Participating businesses allow customers to have their in-person purchases delivered to their homes at off-peak hours by transit employees and contractors. It serves many civic organizations, not just individuals, and works with organizations to find new ways to meet logistics and transportation needs.

Impact Zones

DECISION-MAKING

The Discovery Cars substantially alter riders' decision-making calculus.

For instance, people who need to get to their destination quickly tend to bypass a Discovery Car and instead choose a rapid transit option like BART or express light rail. Because the range of service options uncouple the need for speed from the desire for a pleasant ride, riders generally opt for the more fun, social, and relaxing Discovery Cars unless they need to be somewhere urgently. They are much less eager to arrive at a destination when the journey is enjoyable. This has the benefit of diffusing the concentration of riders at certain times of day along specific routes. The municipalization of commercial transit allows for a high level of coordination and interoperability between all transit options. Discovery Cars offer an integrated app that helps riders plan a journey on the spot based on where they're going and why, and then recommends the right transit option or a mix of options to meet their needs.

The Discovery Car system rejects conventional imperatives around efficiency. While this benefits the city and its residents, the system is not as green as it could be: Keeping trains running all day for people who don't strictly need to travel inherently means energy savings aren't being maximized. And while cutting-edge green technology and clever routing lessen this effect, many people call the project into question on these grounds.

RISKS

Data collection and storage enable the transit system's behavioral nudges that present several potential risks, including breach of privacy, cybersecurity threats, and discrimination.

Even though the agency rejected technologies like facial recognition and biometric monitoring, it used mobile wallets in its experiments to engineer social cohesion. Mobile wallets are criticized across the political spectrum, sometimes due to misunderstandings about the technologies and their effects, but often due to informed understandings of potential risks. Several citizens oppose the premise that transit agencies should nudge riders into doing anything. Others disagree with the way some of the categories are defined and the nudges that are specific to them. Other people are not opposed to the mobile wallet system and data collection in general but believe that their particular uses carry potential risks that outweigh the current benefits.

While social cohesion is commonly understood to create greater resilience in the face of crisis, the Discovery Car system and other reforms to increase social cohesion create new vulnerabilities. For instance, its reliance on people congregating in shared spaces could prove untenable or dangerous in the event of contagious disease outbreaks or mass shootings.

Impact Zones

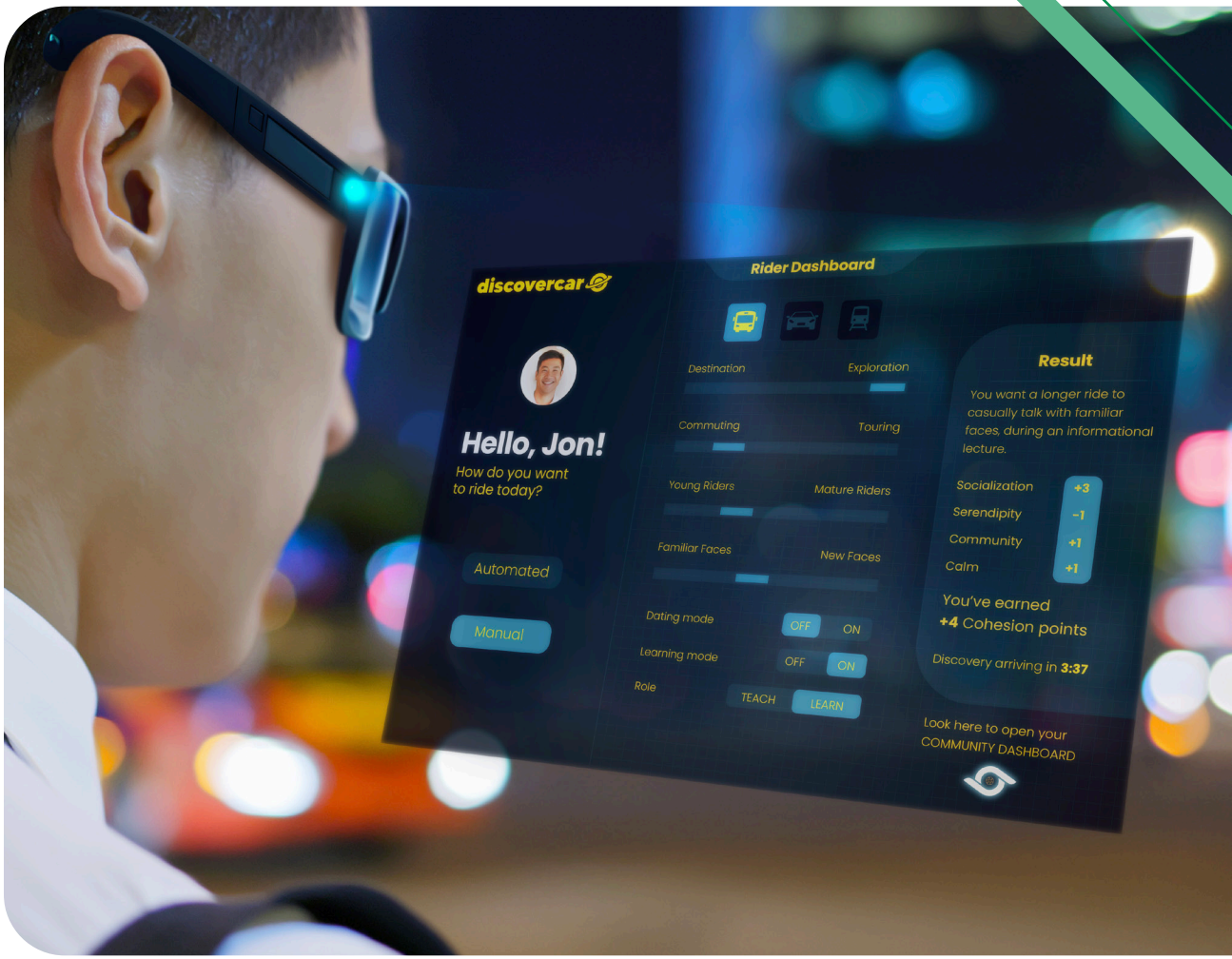
FUNDING

The Discovery Cars system has a unique funding model.

The theory that drives the project is that Discovery Cars increase social cohesion, which creates positive externalities—second- and third-order impacts that advance other goals. For example, research indicates that high levels of social trust and cohesion positively affect individual and community health, happiness, and economic prosperity, and may curb crime and violence. Over an extended period, this could result in significant savings in public health, education, policing, and criminal justice, all areas where spending increases would otherwise be expected. Current investments are paid for through anticipated future savings. However, this approach was controversial from the beginning and has remained so. While savings have materialized, critics point out that it is hard to definitively determine their cause, because violence, education, and health behaviors don't occur in a vacuum.

Summary

This transit system that focuses on social cohesion benefits almost all San Francisco Bay Area residents, but it also diverts resources away from routes optimized for efficiency or revenue. As well, people who wish to keep their neighborhoods insular are largely opposed. In addition, the systems' focus on serving city residents means people who live outside the city and commute to San Francisco, or have difficulty proving residency because they are unhoused or for other reasons, would not share in the benefits. While a growing movement of concerned people has come forward with a list of reforms to rectify this and other issues, the small number of people who oppose the system overall use these issues as a wedge to cast doubt on the whole system.



SCENARIO 5

Embedding Regeneration

Turning Transit Agencies into Climate Action Organizations

SCENARIO 5

Imagine repurposing transit agencies into climate action organizations. After decades of extreme weather and climate emergencies, deep social and economic inequalities, and intergenerational conflict over what to do about it all, political radicalization gives rise and voice to new generational power. With this shift comes a vision that goes beyond climate mitigation to reach for recovery, healing, rewilding, and regeneration. A new civic responsibility is emerging, and public transit agencies are at the center as mobility becomes a force for climate and community action.

The past ten years have been tough.

The after-effects of COVID-19 and its recurring variants, combined with violent political radicalization, never-before-seen inequalities, and now-frequent extreme weather events, have caused deep trauma. Society is sick, and the planet is hurting. Some people have fallen into pessimism and believe the world is broken beyond repair, although many believe that now is the time for transformative regeneration. After the strife and the tumult of the 2020s, society realized it must move beyond zero-sum strategies for socio-environmental sustainability and turn all human activity into an opportunity for climate action and social rebirth.

The youth who protested climate inaction, racial injustice, and economic inequality in the 2020s have come of age. Angry, impatient, but deeply motivated, most millennial, Gen Z, and Gen Alpha adults can't afford to live a life that is not focused on recovering the world. For them, work, leisure, and the moments in-between must somehow contribute to healing their local environments and communities. In 2032 businesses, government agencies, and local communities are deeply affected by fresh and radical ideas pushed forward by young leaders and grassroots movements.

Public transportation is the industry that best embraces the concept of embedded regeneration. As a natural connector of the many aspects of urban life, public transportation agencies are now responsible for rewilding landscapes, infrastructures, and symbols of the carbon culture, such as parking lots, multilane highways, and even the atmosphere. Most agencies have adopted partnerships with businesses and communities to fund mobile gardens mounted in buses and trains as a strategy to cool down temperatures in less climate-resilient neighborhoods. As a result, ridership and revenue have significantly increased, as riders now see public transportation not just through the lens of mobility but as a force for climate and community action and even for personal health and wellness.

Impact Zones

MARKETS AND RIDERS

In 2032, most people consider taking public transportation their planetary duty, especially as a growing number of buses and trains become equipped with mobile carbon-capture technologies.

As free-access transportation, flexible work, and orchestration technologies become widespread, riders have shifted from paying for the fastest routes to supporting the most climate-positive rides. A common game among students and workers is carbon-trawling—paying for a bus or train ride and comparing how many kilograms of CO2 one helped to capture.

Tracking and sharing one's green footprint is also important to commuters. Many cities have adopted carbon budgets, so companies provide incentives for workers who can capture more carbon than they produce when commuting, raising their company's public image and preventing fines for going over budget. Sharing one's green footprint on social media is popular among teenagers, as is shaming private car owners. Even personal EVs have gone out of fashion, as many neighborhoods have banned private cars under hyperlocal governance norms.

SERVICES

Transit agencies leading in the field of regeneration have adopted mobile carbon-capture technologies for their fleets. They are repurposing public infrastructure once dedicated to cars into rewilded spaces and neighborhoods.

Rewilding is the practice of returning land to wilderness and natural evolutionary processes. Rewilding disused parking lots and highways have become a mandate for transportation agencies. Cars have given way to other forms of mobility, including dedicated walkers, who have emerged as a new demographic. In many communities, walker-jams are a common problem, and building larger and greener walking lanes and organizing walking groups have become critical demands for cities.

Transportation agencies have become one of the most critical assets for other agencies and governing bodies responsible for reversing climate change. Transportation agencies are a digital hub, providing a wealth of data generated by capturing and monitoring CO2 and tracking the carbon footprint of citizens and companies. They can measure the impacts of rewilding in real time as a byproduct of transportation itself. In 2032, many climate strategies depend on that type of data, and transit agencies are their primary providers.

Impact Zones

DECISION-MAKING

In 2032, the decision-making process in public transportation includes nontraditional data points and stakeholders.

A mix of tracking technologies and new metrics for environmental and mental health, happiness, and public engagement have been added to traditional data points such as revenue, number of rides, and riders transported, and routes and communities covered. In the past, data was used to anticipate shifting numbers and demand for urban mobility, even responding in real-time to the needs of riders. Now planning focuses on quality of life and the impact of transportation on well-being. Hard numbers are still relevant, as are statistics on riders-per-mile, but measuring the results of regeneration in every ride and repurposed lane and sidewalk, and studying the social performance of rewilded communities have become top priorities for urban planning. Management faces a governance challenge in this regenerative culture because citizens have become much more involved in decision-making. Many neighborhoods have councils operating directly with companies and public agencies to co-design solutions that affect their environments.

RISKS

Though environmental and social regeneration are the primary purposes of transportation agencies in 2032, extreme weather events and the deterioration of the social fabric are still significant threats.

Transportation agencies risk not generating enough impact in the scale and time necessary to achieve their goals. Regeneration, rewilding, and other healing strategies are slow processes and susceptible to leaders and communities dealing with urgent issues and the undesirable short-term effects of regenerative strategies. Repurposing of drivers, large idle fleets of old gas-powered vehicles, clashes between different agencies' mandates, and generational conflicts are among the challenges transportation agencies face. But in this heavily climate-aware society, public opinion turns quickly against those who don't play the climate-positive game. In 2032, urgency-led, climate-focused civic engagement can soon become eco-authoritarianism and oppression. Protests are frequent, and agencies are sometimes accused of favoritism, corruption, and privileging some communities over others in the name of climate action.

Impact Zones

FUNDING

To encourage regeneration, many cities have adopted some form of universal basic assets (UBA).

Some have made services such as health and transportation free for most of the population, but even cities that adopted basic income have placed caps on prices and fares of most essential services. In 2032, most transit agencies are reinventing their funding models. One of the most common strategies is to seek out public funds associated with climate change, environmental conservation, crisis mitigation, and the like. The most successful models have repurposed transit agencies into climate-action organizations that operate through mobility and transit infrastructure, which secures grants at the state and federal levels and from private donors. But those funding streams are not enough, and financially healthy agencies have created partnerships and new business models aimed at helping private organizations shift from degenerative to regenerative models. The business of tracking, processing, and selling climate-change and environmental data also has become a huge revenue stream for both transit agencies and vehicle manufacturers.

Summary

In this future, natural and rewilded environments win the most, with benefits for society as well. Metrics to measure and assess the regenerative economy are yet to be standardized, while the long-term impacts of rewilding cities remain uncertain. However, riders and underprivileged communities gain quality of life as a consequence, while providers of greener transportation benefit from a much larger market. The last decade's authoritarianism, polarization, and mistrust still haunt the currently dominant generation, and their anger and anxiety over climate continue. However, there's a dramatic decrease in carbon-intensive employment and car ownership, and the aging Boomers, Gen-Xers, and "net-zero" advocates have lost power. Climate activism is at an all-time high, but eco-authoritarianism is also rising. Knowing when and what to choose among top-down and bottom-up strategies and management is key in this future.