Bay Area Rapid Transit District Regional Rail Planning

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In 1956 the ultimate regional rail plan was proposed for the San Francisco Bay Area: a seamless, uniform mode encircling the bay. A 71.5-mi portion of the original core Bay Area Rapid Transit (BART) system was adopted by voters in 1962 and completed in 1974. It has taken many years within the complex Bay Area decision-making arena to implement the next generation of BART: 35 mi of new track scheduled to open within the next few years. Although further BART extensions remain unfunded, the vision of a regional rail system that "rings the Bay" has been brought within reach with an affordable plan to implement 200 mi of commuter rail service. The BART Extension Program and the practice of regional rail planning at BART are reviewed. It is concluded that the BART regional rail system can be multimodal and that service in a corridor can take many forms as it evolves over time.

In 1956 a comprehensive plan for regional rapid transit was completed for the Bay Area. As originally conceived, the Bay Area Rapid Transit (BART) system would have encircled the San Francisco Bay and reached north across the Golden Gate Bridge, joining nine counties into a regional metropolis. The plan identified a core system for initial development that would serve the population of the present and future; a second-stage system and routes would be constructed in subsequent stages (Figure 1). In essence, the ultimate regional rail system was envisioned: a seamless, uniform mode serving the entire Bay Area.

Today, almost 40 years later, the Bay Area population has doubled. The 71.5 mi of the original core system, adopted by voters in 1962, was completed in 1974 and has served more than a billion riders over the past two decades. Major strides have also been made toward implementing the BART Extension Program over the past two decades. This is due largely to extensive planning efforts that have significantly increased the cost-effectiveness and public support for the program. Thirty-five mi of new BART track and 11 new stations are scheduled for completion within the next few years. Although Phase 2 and 3 projects remain largely unfunded, efforts to advance project readiness continue and the vision of a regional rail system that "rings the bay" has been brought within reach with a plan to implement interim commuter rail service in the unserved corridors.

BART EXTENSION PROGRAM

Overview

The Bay Area political environment offers a challenging environment in which to implement a regional rail system. The Bay Area is a diverse nine-county region. There are 17 transit operators in the region, 4 of which operate rail transit. Overseeing it all is the Metropolitan Transportation Commission (MTC), which is responsible for setting regional funding priorities for transportation projects. Within this environment, a competitive, mode-specific advocacy has developed. At last count, there were approximately 49 proposals being sponsored by 19 sponsors.

BART is governed by a nine-member elected board of directors that represents geographic areas within the three-county BART District. After the "big bang" of new rail in 1972, a phased approach to implementing BART extensions was adopted by the BART Board (Figure 2). Service is planned for incremental implementation in major corridors both within and outside the BART District subject to cost-sharing agreements: Pittsburg-Antioch, Livermore-Pleasanton, Fremont–South Bay, San Francisco Airport, West Contra Costa, Oakland Airport Connector, San Francisco, San Ramon Valley, Santa Clara, and San Mateo counties (Figure 3). The ultimate long-range goal is to fulfill the vision of BART as a regional rail system that circles the bay and beyond. The challenge to attaining this goal: achieving a regional political consensus on funding.

Funding

In 1988 MTC adopted Resolution 1876, a comprehensive regional funding agreement for new rail starts and extensions in the nine-county San Francisco Bay Area. The product of lengthy negotiations among local officials and legislators at state and national levels, the agreement provided the momentum needed to secure significant amounts of local, state, and federal funds for adding nearly 40 mi to the region's rail network. The core of the plan (Figure 4) is the extension of BART in four directions nearly simultaneously: the three Phase 1 East Bay extensions (within the BART District), and the extension of BART to the vicinity of the San Francisco International Airport in San Mateo County. Other projects in the plan include partially funding three light rail transit projects in San Francisco, extending Caltrain in San Jose, moving the San Francisco terminal for the Caltrain commuter rail system closer to downtown, and extending light rail along the Tasman Corridor in Santa Clara County.

The plan is predicated on an innovative financing scheme:

- San Mateo County will buy into the BART system by paying $200 million (1990 dollars) to help finance East Bay rail extensions.
- San Mateo County also will pay 25 percent of the cost of building a BART extension to the San Francisco International Airport.
- Bridge tolls will help pay for rail extensions that serve the bridge corridors.

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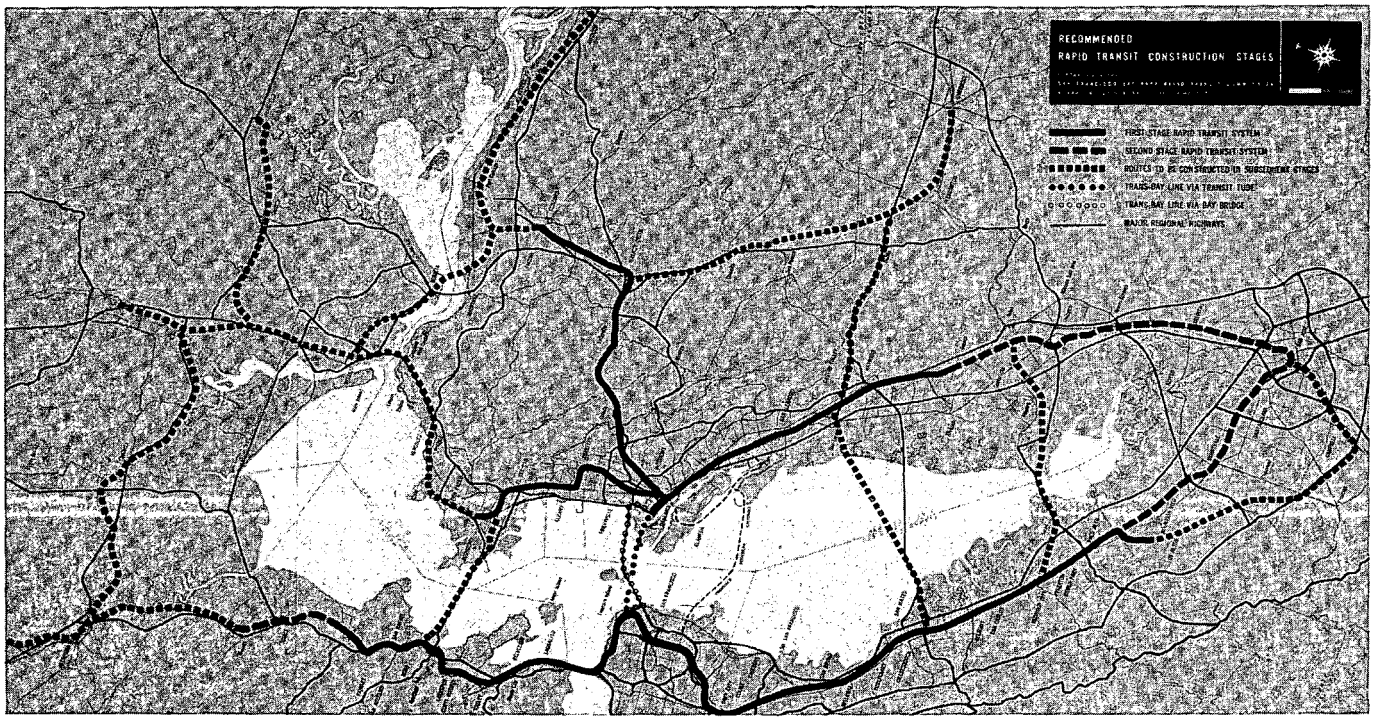

FIGURE 1 1956 Regional Rapid Transit map.

EXTENSION PROGRAM

Nearly 50 percent of the total funding for the extension will come from local sources, including new half-cent sales taxes approved in Alameda, Contra Costa, San Francisco, and San Mateo counties. State funds will finance 21 percent of the costs; federal funds, less than 30 percent.

Program Status

Planning has been completed, and construction crews are building three Phase 1 extensions of the BART system: Pittsburg-Antioch, Dublin-Pleasanton, and the Colma Station Extension. Planning and preliminary engineering work is under way on the San Francisco Airport Extension, and preliminary engineering has been completed for the Warm Springs Extension. Mandated by public vote and funded extensively with local funds, the Bay Area has high expectations for these projects and a unique sense of ownership. The public has demanded that these projects be completed on time and within budget.

BART has embarked on an ambitious Phase 1 extension program aimed at meeting and exceeding these expectations. Simultaneously, BART has sought to advance the Oakland Airport Connector Project. Although this project is identified as a Phase 2 project, policy requires that it be established before or at the same time as an extension of BART to the San Francisco Airport.

When complete, the Phase 1 extension program will add 34.5 mi of new double track, 11 stations, and more than 18,000 parking spaces in Contra Costa, Alameda, and San Mateo counties. The Oakland Airport Connector Project will provide a vital 3.24-mi link to the system. All of these projects are described in the following.

Pittsburg-Antioch Extension

In the East Bay, the Pittsburg-Antioch Extension will link western and burgeoning eastern Contra Costa County with nearly 8 mi of new BART track. One construction contract was completed last year, eight others continued or will start up this year, and the last will kick off in early 1994. Estimated to cost $506 million, this extension will serve an estimated total of 12,000 average daily riders at the new North Concord–Martinez Station in 1995 and the new West Pittsburg Station in 1997.

Dublin-Pleasanton Extension

In neighboring Alameda County, the $517 million Dublin-Pleasanton Extension experienced similar momentum, with one construction contract completed last year, eight more up and running, and three others set to start up this year. The longest of the Phase 1 extensions, this new 14-mi line will attract an estimated 22,480 average daily riders to new stations in Castro Valley and the cities of Dublin and Pleasanton by late 1995.

Colma Station Extension

On the peninsula, the Colma Station Extension—a first step to the San Francisco International Airport—continued to advance ahead of schedule with two construction contracts completed and all others in motion. Due to open in 1995, this 1.6-mi extension is projected to serve 18,000 average daily riders and cost an estimated $170 million.

PHASE	INSIDE CURRENT DISTRICT OR UNDER FUNDING AGREEMENTS
I.	North Concord-West Pittsburg[2] Irvington-Warm Springs[3] Castro Valley - Dublin[3,8] MUNI Metro Extension Project[4] Colma-Tanforan-San Francisco Airport[5]
II.	Pittsburg-West Antioch-East Antioch Pleasanton-West Livermore-East Livermore[3] San Francisco[6] San Pablo-Hilltop Oakland Airport Connector[7]
III.	San Francisco[6] Pinole-Hercules/Rodeo-Crockett San Ramon Corridor

NOTES:

1. The several segments shown under each Roman numeral are understood to be implemented concurrently, to the extent that funding is available. BART will be the operator for any new heavy or light rail transit starts or extensions within the three BART counties.
2. To be extended east beyond West Pittsburg as funding permits, per SB 1715 of 1988.
3. Third station may be constructed only with funds additional to those identified in MTC Resolution 1876 (as revised in 1989).
4. The San Francisco Project is identified through coordination with the City and County of San Francisco as the MUNI Metro Extension to the CALTRAIN Depot South of Market.
5. Agreement of February 28, 1990 with SamTrans to proceed with SFO extension, subject to BART project approval.
6. Specific San Francisco Project to be identified through coordination with the City and County of San Francisco. Section 29034.5 of the California Public Utilities Code lists an extension of District services and facilities to the northwest section of the City and County of San Francisco as a District service commitment.
7. A people-mover, or some other mode of travel, to the Oakland Airport to be established before or at the same time as an extension of BART to the San Francisco Airport.
8. Funding from Proposition 116 shall not be allocated to the Warm Springs Extension (WSX) until funding for the Dublin-Pleasanton Extension has been guaranteed.

PHASE	OUTSIDE CURRENT DISTRICT
I.	Milpitas
II.	Millbrae-Menlo Park Milpitas-San Jose
III.	Menlo Park-San Jose

9. Subject to a satisfactory cost-sharing arrangement with San Mateo and Santa Clara Counties and project approval by BART. Pursuant to Section 29034.5 of the California Public Utilities Code, only non-District funds may be spent by the District for the purpose of extending services and facilities outside of District's January 1, 1971 boundaries until the District meets specified service commitments within the 1971 boundaries.

FIGURE 2 BART extension staging policy.

San Francisco Airport Extension

Concurrently, environmental studies and preliminary engineering are proceeding on the San Francisco Airport Extension. Six major alternatives and three related design options are now undergoing intense scrutiny, and the debate over an external or internal station continues. A final decision and project adoption is scheduled for fall 1994. The locally preferred alternative, or proposed project, includes 6.4 mi of new BART track extending from Colma to new stations at Hickey, Tanforan, and the airport.

The airport extension is estimated to cost between $757 million and $960 million, depending on the final route alignment and whether a subway option is ultimately approved. It is forecast that 42,976 average daily riders will be attracted to this extension when it opens toward the end of the decade.

Warm Springs Extension

The Warm Springs Extension will extend BART 5.4 mi from the existing Fremont Station to new stations at Irvington and Warm Springs in southern Alameda County, thus advancing BART closer to Santa Clara County residents. Projected to cost $540 million, the Warm Springs Extension will provide combined parking for approximately 3,500 vehicles. Final design was halted in the summer of 1993, however, because of pending litigation and a funding shortfall.

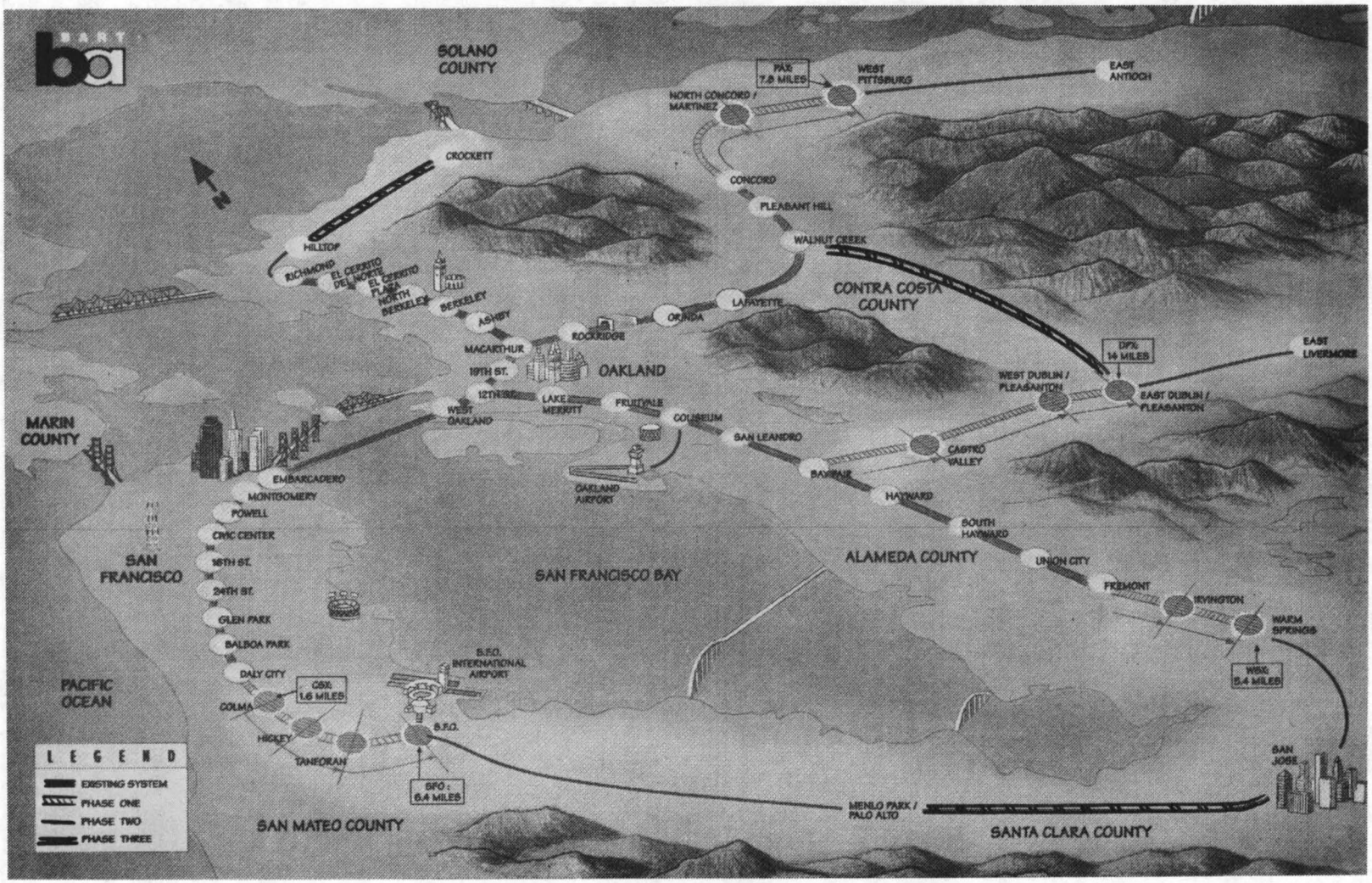

FIGURE 3 BART extension program map.

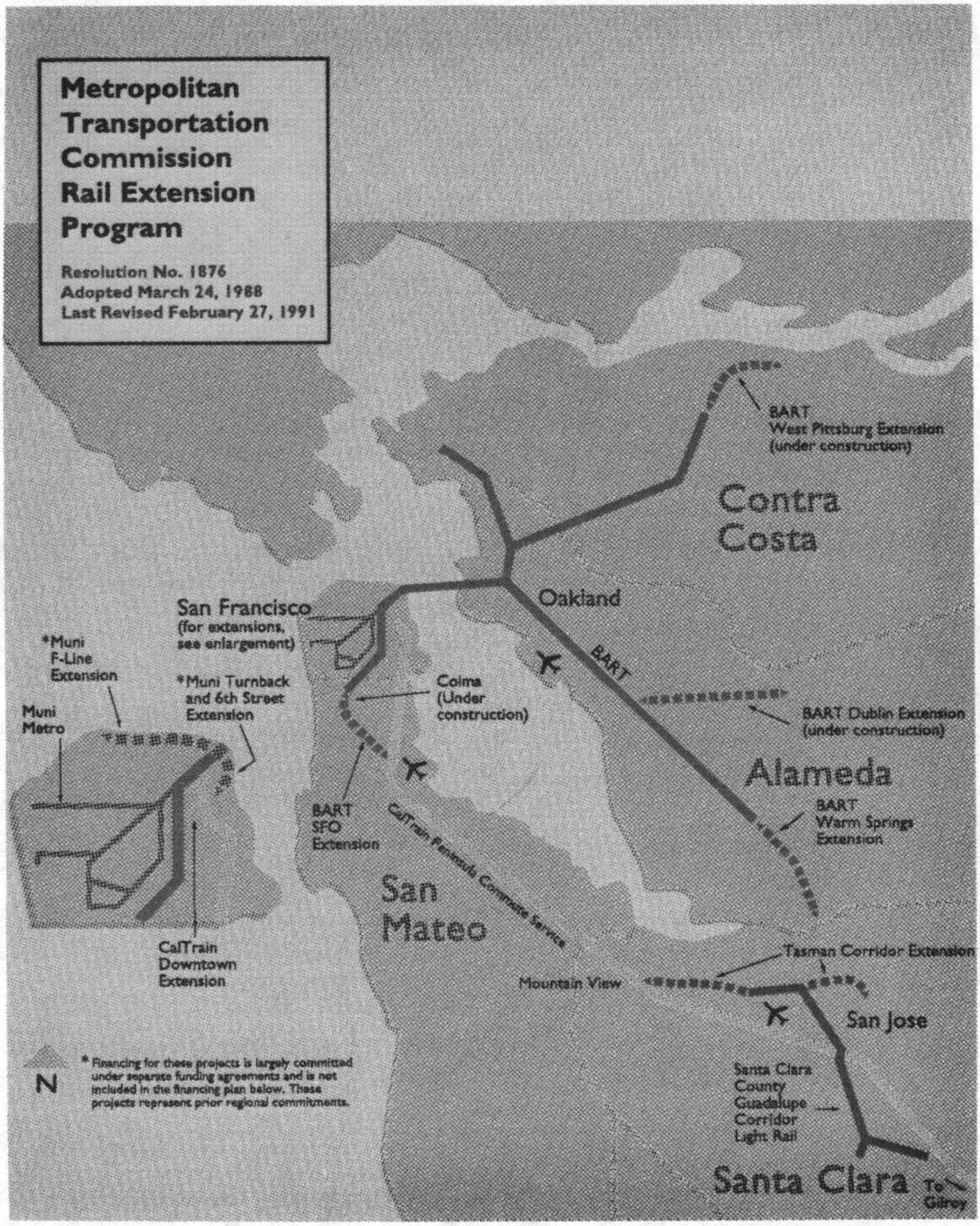

FIGURE 4 MTC rail.

Oakland Airport Intermodal Connector Project

The Oakland Airport Connector Project, under study since the 1970s, is envisioned as a fixed-guideway connection between the BART Coliseum/Oakland Airport Station and the Metropolitan Oakland International Airport, a distance of 3.24 mi. BART, in partnership with the Port of Oakland and AAI Corporation, was recently selected by FTA as one of three finalists for grants to support the Suspended Light Rail System Technology (SLRT) Project. A feasibility study that examined the application of SLRT to the connector project was completed in fall 1993 (Figure 5). Concurrently BART is examining the viability of a range of other applications.

BART's REGIONAL RAIL PLANNING PROCESS

Long-Term Implementation Planning

Developing the Bay Area regional rail system is a long-term venture. It has taken many years within the complex Bay Area

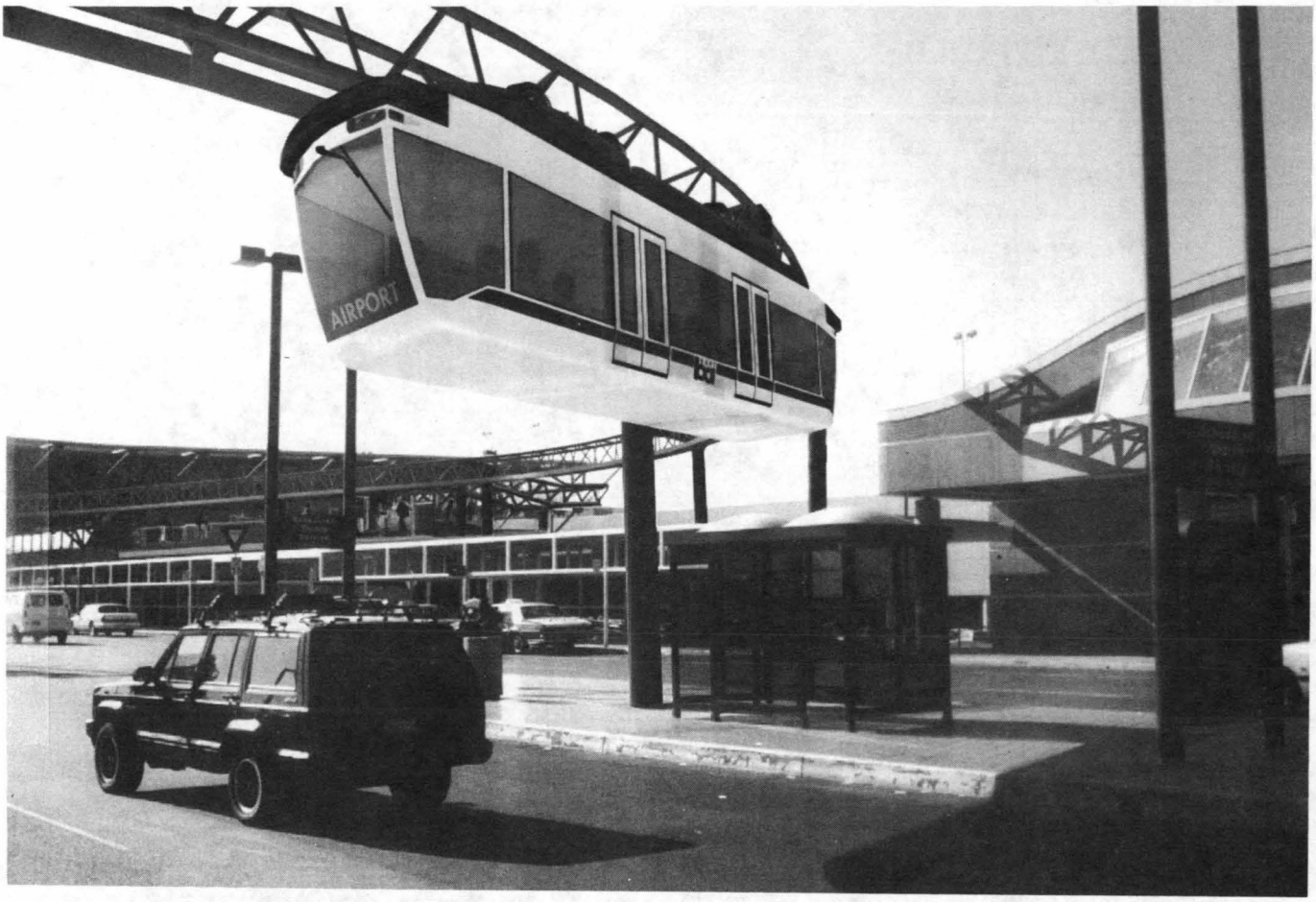

FIGURE 5 BART: Oakland Airport intermodal connector.

decision-making arena to develop consensus and fund the next generation of Phase 1 BART extensions. It will take many more years, possibly decades, before Phase 2 and 3 projects are developed. Although BART continues to advance these longer-term projects through implementation planning, recently adopted policy has refocused planning efforts on alternative modes. In addition, MTC is developing a financially constrained regional transportation plan (RTP) for the Bay Area that will affect funding opportunities for BART extensions. In response, BART recently identified a 200-mi commuter rail system that, consistent with the BART Extension Staging Policy, can provide interim regional rail service now while BART continues to pursue long-term planning and construction.

Implementation planning at BART is a long-term strategic approach to regional rail development. Its primary objectives are to accelerate long-range project implementation by improving project cost-effectiveness and community support. It achieves this by seeking immediate ways to lower future project costs and building future ridership by linking the corridor with the BART system through an interim mode of transit service. Existing needs and opportunities in the corridor shape the "evolution" of the project.

There are five major elements of BART implementation planning:

- Long-range planning studies,
- Community consensus,
- Early acquisition right of way,
- Interagency coordination, and
- Interim service.

BART has engaged in extensive implementation planning efforts for all of the East Bay extension projects over the past several decades.

Long-range planning studies for BART extensions were initiated soon after the BART system opened in the 1970s. Studies were completed for the Livermore-Pleasanton Extension, the Pittsburg-Antioch Extension, the San Francisco Airport Extension Project, the Oakland Airport Connector Project, the San Mateo County Extension, and a Southwest Corridor Extension in San Francisco. Subsequent studies were completed for the Warm Springs and West Contra Costa County Extensions in the 1980s. These studies, updated periodically to reflect land use and other changes, resulted in preferred mode, alignment, and general station locations for these projects.

All of these studies were completed with extensive community involvement. Most of the studies were completed with the participation of technical and policy advisory committees composed of staff and elected officials from affected communities. Extensive public meetings were held on most studies at major milestones, and many of the projects had citizen advisory committees. This community involvement continued through environmental clearance, design, and now construction on many of the projects.

In the early 1980s, BART adopted an Advance Right-of-Way Acquisition Program. A limited pool of funds was set aside, and all necessary extension rights of way were identified and ranked in terms of the need for preservation. Phase 1 station rights of way, for example, located in areas of rapid development were given a high priority. Advance right of way acquisitions from willing sellers were made for potential station sites and track alignment. These measures allowed BART to preserve viable station alternatives, thus ensuring that displacements at a future date would be minimized and future project costs reduced. It also allowed communities to engage in long-term station area planning, which in turn could improve future ridership and long-term cost-effectiveness.

Early project definition along with extensive interagency involvement has created many project development opportunities. On the Dublin-Pleasanton Extension, for example, it allowed for close coordination with the California Department of Transportation (Caltrans) in the early 1970s so that the widening in the Interstate 580 corridor could accommodate an 80-ft BART median for approximately 8 mi. This resulted in substantial cost savings. Close coordination with local jurisdictions has also afforded the opportunity to have potential station sites included in the general plan, thus allowing for long-range area planning before project implementation. BART continues to work closely with local jurisdictions and Caltrans to ensure that new highway improvements do not preclude subsequent BART construction.

Another essential element of long-term implementation planning is the provision of interim service in future extension corridors as a means of developing the "transit habit" and improving potential ridership. BART Express Bus service is operated in all of the future extension corridors. In addition, interim park-and-ride facilities have been constructed on BART-owned station sites.

Near-Term Interim Solutions

Despite its strong "silver bullet" train identity, over the past several decades BART has considered a variety of modes for possible implementation in extension corridors including bus, light rail, advanced light rail, and people-mover technologies. Last year, BART adopted a new policy regarding development and operation of the regional transit system. The district committed to "continue functioning as the regional rail operator, to continue planning for multiple transit modes, and to expand its operations to nclude a fully integrated coordinated multimodal transit system."

MTC is currently preparing an RTP. Described as a 20-year blueprint to guide Bay Area transportation investments, the RTP will divide projects into two tracks. Track 1 of the RTP will include only those projects for which existing sources of funds can be identified. Track 2 will include projects for which funding has not yet been identified and in essence will be used as an advocacy plan for new funding.

The MTC RTP process demonstrated that despite continued efforts by BART, new service in all of the BART Phase 2 and 3 extension corridors would be highly unlikely over the next 20 years. Consistent with new BART policy, BART developed the FasTrack, a staged approach to advancing the BART Extension Staging Policy within Track 1 of the RTP. It uses available funding sources and existing rail infrastructure to provide near-term interim commuter rail service in existing BART extension corridors.

BART's NEW FASTRAK PROGRAM

The FasTrak commuter rail program (Figure 6) will give the San Francisco Bay Area more than 200 mi of new passenger rail ser-

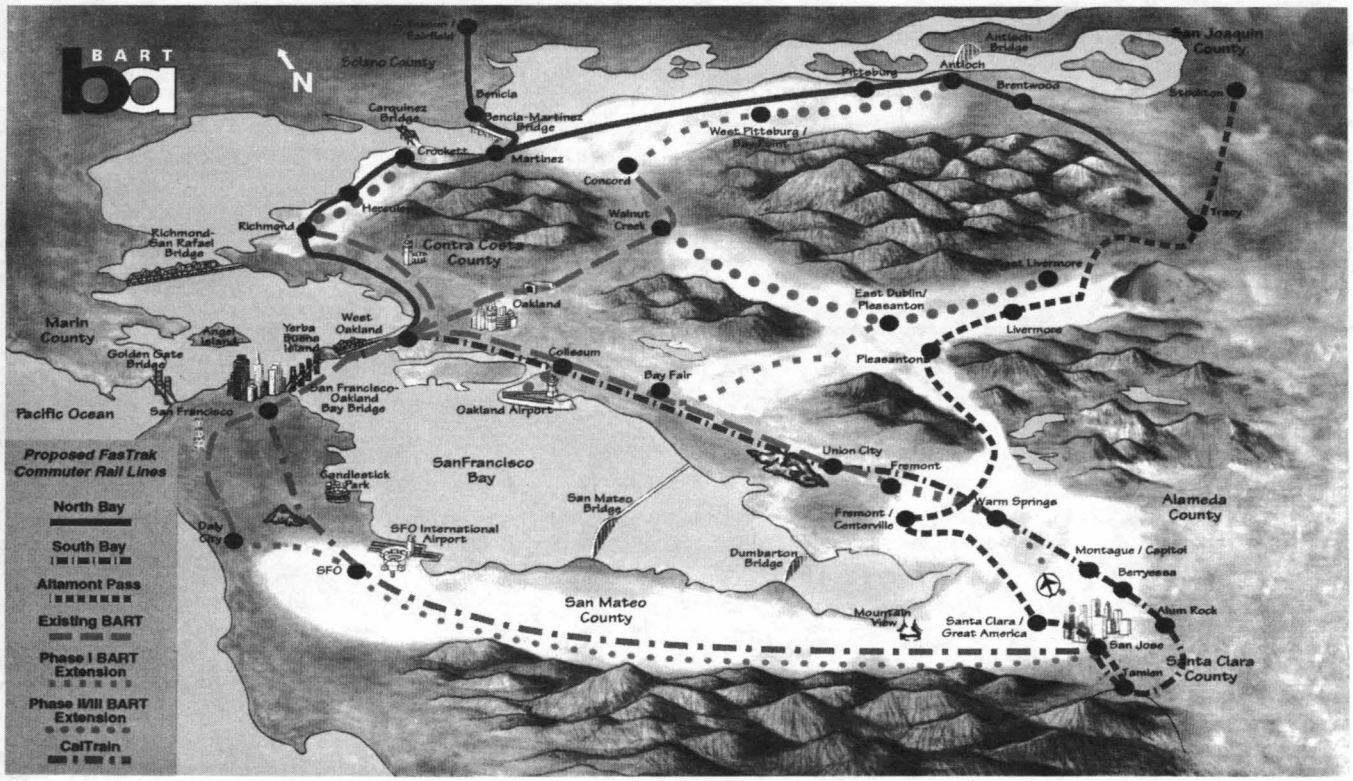

FIGURE 6 FasTrak regional rail map.

vice in three corridors: South Bay, North Bay and Altamont Pass. At an estimated cost of $100 million to $200 million, the regional commute system could be operational within 2 years, providing a reasonable commute alternative in Solano, Contra Costa, Alameda, San Joaquin, and Santa Clara counties for 3.5 million passengers a year.

South Bay Commuter Rail

The South Bay Commuter Rail line will provide service from the Cahill Station in San Jose to the existing BART station in West Oakland using the existing tracks of the Union Pacific Railroad. It will include 50 track mi and could serve up to 5,700 passengers a day. Intermodal links will provide easy access to BART, the new North Bay Commuter Rail, intercity rail, Caltrain, the Guadalupe rail system, the Tasman rail system, and the Oakland Airport Connector.

North Bay Commuter Rail

The North Bay Commuter Rail line will extend service along the Southern Pacific Railroad tracks to Brentwood in East Contra Costa County, with an additional line serving Fairfield and Suisun City in Solano County. It will include 77 mi of track between Brentwood, Fairfield, and West Oakland and could carry up to 6,400 passengers a day. Stations along the way will serve the communities of Antioch, Pittsburg, Martinez, Crockett, Hercules, and Richmond, providing easy access to BART, the new South Bay Commuter Rail, and intercity rail.

Altamont Pass Commuter Rail

The Altamont Pass Commuter Rail line will connect Stockton and Manteca with Livermore, Pleasanton, Fremont, Santa Clara, and San Jose using the existing tracks of the Union Pacific, Southern Pacific, and Joint Powers Board. The complete line will include 80 mi of track and could serve an estimated 1,400 passengers a day.

FasTrak offers multiple advantages:

- Alameda, Contra Costa, Santa Clara, San Francisco, and San Mateo counties will at last be linked in a fully integrated network of regional rail.
- An instantaneous regional rail network will be created: Intermodal Transit Stations will finally link all of the Bay Area's major transit systems in a single network.
- Commuter Rail will connect directly with the existing BART system, increasing BART ridership and helping the Bay Area develop its transit habit.
- Existing infrastructure and resources will be put to valuable and immediate public use.
- The Bay Area's regional rail system will evolve over time. Building on existing infrastructure and land use densities, it will be able to adapt and expand as conditions change and ridership grows.

CONCLUSION

Building a regional rail network takes decades. It has taken many years within the complex Bay Area decision-making arena to develop consensus and fund the next generation of BART extensions. Long-term implementation planning is an activity that is essential to achieving the long-term goals of the BART extension program and to bring a regional rail system on-line today. It can lead to project acceleration by improving project cost-effectiveness and community support. It achieves this by seeking immediate ways to lower future project costs and to build future ridership by linking the corridor with the BART system through an interim mode of transit service. Service in an extension corridor can take many forms as it evolves over time. Existing needs and opportunities in the corridor shape the "evolution" of the project.

Publication of this paper sponsored by Committee on Rail Transit Systems.