

Transit Hubs for the San Francisco Bay Area.

Preface

The League of Women Voters of the Bay Area, an InterLeague Organization of the 21 local Leagues, has long seen the need for improved transit connectivity. We hope to expand the regional dialogue on the investment choices and jurisdictional compromises needed to build a cost-effective transit network.

This issue paper focuses on intermodal transit hub planning. Transit hubs are a particularly strategic consideration now. New hubs for ferry service and high-speed rail are being determined even as the ambitious transit expansion program of the Metropolitan Transportation Commission for other modes is being separately pursued. An efficient transit network must shape future development if we are to protect our environment and provide access for all to urban opportunities. We cannot afford disjointed transit systems.

Issue papers are intended to explore areas that are still somewhat controversial among Bay Area Leagues and murky in regional decision making processes. The perspectives are NOT an attempt to portray a League consensus or to state League positions. Posting on the League Website with the opportunity for continuing discussion may open new paths in the difficult terrain of regional decision making.

The League wishes to thank the transit and transportation planners and administrators who gave time for an interview. Our thanks to Bryan Albee, Pam Belchamber, Dave Berger, Alan Cantrell, Steve Castleberry, Larry Cheeves, Dan Christians, Celinda Dahlgren, Judith Harrison, Jim DeHart, Tony DeVito, Michael Evanhoe, Mark Evanhoff, Harley Goldstrom, Carolyn Gonot, Lillian Hames, Dan Leavitt, Maria Lombardo, Marilou Lupon, Joan Malloy, Robert McCleary, Steve Morrison, Arlene Patton, James Ryan, Gregg Schiffer, Richard Spitler, Peter Strauss, Cheryl Tartar, John Twitchell, Suzanne Wilford, Al Zarhadnik. Their candid perceptions of transit hub planning were illuminating and appreciated.

Though this paper focuses on regional transit planning weaknesses, we regard highly the work of these professionals and their openness to dialogue. Their accomplishments, given the varied development patterns and expectations of the Bay Area and the complex structure of transit funding and governmental authority, are remarkable.

League of Women Voters Transit Hub Interviewers from Leagues in Sonoma, Solano, Santa Clara, San Mateo, Marin, Contra Costa and Alameda Counties:

Eva Bansner, Nancy Burnett, Linda Craig, John Eells, George Ellman, Barbara Friedrich, Trisha Gorman, Liz Hawthorne, Bob Hawthorne, Kathy Hoffman, Virginia Holtz, May Huddleston, Marion Jones, Libby Lucas, Gail Murray, Marcus O'Connell, Judy Orttung, Nancy Richards, Willard Richards, Joyce Roy, Leslie Stewart, Len Swenson and Onnolee Trapp.

Hubs

A transit hub is a place designed to link different modes of transport. It is shaped for visibility in its setting, for a high level of activity and for the comfort and convenience of transit riders. The rider is provided for with clear direction to connections and with provisions for needs and interests so that time in the hub is not wasted. Transit hubs are magnets for activities must draw people from far and near, centering development patterns and providing richer cultural links.

Are Hubs Part of Our Regional Transit Map?

If the Regional Transit Diagram in the Metropolitan Transportation Commission's "Getting There on Transit" on the previous page is an indication, we appear to be building separate transit corridors for different modes and operators. The Diagram indicates each operator's route by a line of distinct color with their own bubbles for stops. Places to connect-hub bubbles linking operators with each other--- are not indicated; regional trip possibilities cannot be visualized by potential users. Downtown/City Center hubs and stations with passenger amenities are not identified, leaving the potential rider again less certain of intermediary destinations. The influence of transit diagrams was most forcefully demonstrated when London was able to diagram the transit network for that great city, making London vastly more accessible to its citizens and visitors.

Are Hubs Part of Our Regional Transportation Plan?

As a system of hub connections was not apparent, the League of Women Voters set out to find out if there was an implied map understood by transit agencies around the Bay. The League interviewed twenty agencies in the Bay Area in the spring of 2002. It was remarkable that none indicated that the Metropolitan Transportation Commission (MTC) was a factor in their siting of transit hubs, though MTC is the metropolitan planning organization. A possible exception might be the express bus stop sites in Contra Costa and Solano Counties if considered hubs. Caltrans also was said to be "not a factor" in determining hubs, though many transit routes use state highways. We discovered no regional system of hubs anchoring transit routes. The lack of identified hubs is obvious several places around the Bay. In Southern Alameda County there is no hub linking BART with ACE train or Capital Corridor rail services; also rail service proposed on a restored Dumbarton rail is not clearly linked at the east end. In San Francisco there is no hub connecting north bay (Golden Gate) and east bay (ACTransit) to Caltrain Peninsula service. In the north bay, the Napa link between Solano transit and Sonoma is missing. Efficient hub locations increases the value of major transit investments. Efforts have been made to fill gaps for workers during commute hours with shuttles. But a flurry of specialized shuttles may confound hubs at rush hours while leaving those with non standard shifts or other trip needs stranded.

How Are New Hubs Determined?

Interviews indicated that Bay Area hubs are conceived and implemented primarily through local initiative. Thus Union City is seeking to fill a regional hub role in Southern Alameda County by planning a regional hub to link BART, Dumbarton bus service, Capital Corridor rail service and new conventional rail services. They have a specific plan to develop adjacent acreage for transit-oriented commercial and residential uses. To get a Capital Corridor stop, Union City now has to "find" the resources to improve the running time to Sacramento enough to offset their stop time. (Other stops in Southern Alameda County had been initially selected, though lacking BART connection.) Union City is also promoting new rail service on its two existing conventional rail lines, including using idle ACE trains for runs between San Jose and Union City BART on off-commute hours. Though a very small transit district, Union City may prove the importance of local enterprise in lieu of systematic regional transit hub siting

. Another major influence on hub location that emerged in the course of the interviews was the role of transportation sales tax measures. In the continued fallout from Proposition 13, we increasingly plan by the ballot. A list of transportation investments that have demonstrated enough appeal to reach the 2/3 majority vote necessary are placed on county ballots, with only the original BART initiative and the current Marin and Sonoma efforts spanning counties. The results become a defacto transit expansion plan, rewriting the regional plans. This was most recently and dramatically demonstrated by Santa Clara's Measure A with BART to San Jose and a host of other projects.

Local control of land use is a more widely recognized confounder of long range hub planning. If major developments are approved, the local transit agency is expected to provide service whether the location fits into an efficient service network or not. If the best location for a hub is disdained by the local jurisdiction, it does not go forward. Only Portland is known for making transportation investment contingent on appropriate land use.

What Transit Modes Must Hub Planning Consider?

1. **High speed rail (HSR) stations** seem a logical place to begin in planning a hierarchy of transit hubs. They are not on the regional plan. Regional policy adopted by MTC in 1999 calls for high speed rail to enter the Bay Area at San Jose so that both Oakland and San Francisco, along with San Jose, could be served, rejecting a less expensive Altamont Pass alignment with faster times from the Bay Area to Sacramento. Although routing was specified, hub locations were not identified in MTC policy to guide planning for terminal space and feeder services.

A Transbay Terminal terminus in San Francisco would serve the most high speed rail passengers. The Terminal was included in the recent Regional Transit Expansion Plan, but commitments have been characterized as "hollow" by long-time observer Angelo Siracusa who has watched previous commitments (Resolution 1876) postponed. San Francisco is supposed to "find" the money for the terminal through redevelopment.

There is agreement that the San Francisco Airport would be the next stop. Unfortunately the design of the Millbrae station has constricted rail right of way, raising costs. A new San Mateo County sales tax measure including BART might preempt altogether the Peninsula rail right of way needed for HSR as the existing rail right of way on the Peninsula cannot accommodate both BART and HSR. Palo Alto was the next likely stop for some HSR trains, but Dumbarton rail might revive the Redwood City alternative.

The Diridon Station is being planned by the City of San Jose as a Grand Central station. As the nearby Santa Clara Station is being developed with better connections to the airport and light rail, some HSR trains may stop there. Southern Alameda County and downtown Oakland HSR stations are floating between several possible locations; only the Oakland airport/ Coliseum BART station seems fixed.

Although high speed rail provides the most benefit from central city hubs with good pedestrian and transit access and surrounding dense mixed use development like the Transbay Terminal, the High Speed Rail Authority relies on local jurisdictions to locate hubs. Modesto was cited as an example where the downtown was not chosen for the station location. Without a regional hub plan, cities actively planning their own stations -- like San Jose and Sacramento -- may get them along with cities in the Central Valley seeking development. Or, lack of regional planning and cooperation may render HSR infeasible. Unlike other transit, HSR must recover all operating costs through ridership, and the Peninsula is expected to be a profitable section. The environmental consequences of expanding reliance on air travel without a strong rail option needs to be considered.

2. Ferry terminals are on the regional map anchoring existing routes between San Francisco and Marin, Alameda and Solano Counties. Planning of additional routes was delegated by the Legislature to a Water Transit Authority (WTA) by the Legislature. The WTA is attempting to chart a course through many obstacles. Exploration of non polluting ferry vessels and access guidelines to avoid spoiling sensitive waterfront with excessive asphalt are important elements.

Golden Gate Transit and Vallejo Transit provide good ground transit access to support the ferry hubs at Larkspur and Vallejo. The Golden Gate buses serving Larkspur reserve places on the fast ferry for passengers on the bus. The Vallejo bus system is focussed on the ferry terminal; fast ferries from an attractive, convenient terminal have generated an exceptionally high fare box recovery. Surface parking is to be moved off the waterfront into a parking garage between downtown and the waterfront. The Ferry Building in San Francisco most effectively encourages transit and walking access by providing no parking. Passenger amenities including a European-style market hall are being added. Good passenger information links to the transit available from the terminal still is not present.

Sausalito may be a model for development of terminals in smaller places. Because the landing is not isolated by vast parking areas and traffic as at Larkspur, many passenger options are apparent through proximity and line of sight. Redevelopment of the Alameda Naval Air Station, Mare Island, Treasure Island, and San Quentin around ferry hubs

could provide sites for new communities, institutions and visitor destinations, reducing sprawl pressures and hastening clean up of toxics on the bases. The limited accessibility of remaining underutilized sites around the Bay may make ferry a competitive transportation option. The WTA is exploring many other possible terminals identified by the Bay Area Council and by earlier MTC reports. Potential hubs include Moffett Field, Redwood City, Coyote Point, Oyster Point, Candlestick, Pac Bell Park, the Presidio, San Rafael, Port Sonoma, Antioch, Pittsburg, Martinez, Crockett, Richmond, Berkeley/Albany, the San Francisco Airport and the Oakland Airport.

Ferry recommendations are to be made this fall in order to provide time for public hearings before delivery to the Legislature in December. In addition to environmental criteria, the Water Transit Authority intends to match the cost effectiveness of ACTransit routes with 48% farebox recovery, higher than most Bay Area transit routes.

3. **Airports** are recognized as hubs in regional transportation planning with the funding of special BART spurs to the San Francisco and Oakland airports. A people mover from the San Jose Airport to the Santa Clara Station is planned.

American airports generally have poor transit connections; it has been faster to rent a car and drive away than to find the appropriate bus stop and board a bus. A bus service planner grouched that the value of parking revenues deterred the airport operators from encouraging transit use while an airport planner dismissed BART stations as "a huge parking lot with an occasional train." The decision to locate the San Francisco airport hub in Millbrae instead of a closer to the airport may have been influenced by the need of airports to recover costs and a determination that airport land was too valuable for BART parking. The Millbrae hub location incurs added costs for the BART spur back into the airport that duplicates some of the Airport's Airtrain monorail route to terminals, parking and car rental agencies.

Airport parking issues arising with the new BART connections have yet to be resolved in BART board policy. Because free parking at/near BART stations will be magnets for air passengers seeking to avoid expensive long term parking at the airport, BART is considering development of long term pay parking at various stations. This use of land at BART stations would discourage transit oriented development, especially if those parking spaces must be replaced per BART's current policy. The cost of providing structured parking to replace surface lots makes many transit oriented development projects, that would provide more ridership, uneconomic to build.

To address the lack of transit information at airports, BART is staffing a BART information booth and ticket sales facility at the airport supplemented by white information phones.

4. **Conventional Rail hubs** are beaded along the west side of the Bay from the Fourth and Townsend Station in San Francisco down to Gilroy. This Caltrain service is the offspring of a service initiated in 1860 by San Francisco, San Mateo and Santa Clara Counties. Along the East Bay from Sacramento to San Jose more limited Capital Corridor

passenger service has been reviving. Altamont Commuter Express (ACE train) service has been even more recently reestablished from Stockton to San Jose, utilizing historic station locations.

Most of the 34 **Caltrain** stations are embedded in the history and in the fabric of their towns because they were focal points for initial Peninsula suburban development. Preservation of historic features and development of supporting land use and pedestrian access are primary "place-making" considerations of Caltrain real estate development staff. Only one station has ever been relocated. The most loved building in San Carlos is its train station so views of the station shaped the grade separation work done to separate rail and road ways. A new scale of hub development was interjected with the 3000 parking spaces and modern space frame of the combined Caltrain BART station at Millbrae airport hub, near completion.

Plans for denser transit oriented development around stations were said to have made the most progress at the Colma station. As the Colma station area is partially in the County, the San Mateo County transit agency (Samtrans) worked on land use plans to complement station use. The San Carlos and Redwood City stations are seen to have much development potential; San Mateo has adopted a specific plan for station area development. Recent Sunnyvale development demonstrated the ability to solve noise and cost problems with building techniques and density bonuses. With more passengers within walking distance of the station, amenities such as news stands and coffee bars can be supported. Downtown Mountain View is considered exemplary of good, recent transit-oriented development in Santa Clara County.

Caltrain staff managing train service and Samtrans staff managing San Mateo County bus service operate together from San Carlos offices; planning for multimodal connections at Caltrain hubs does not seem to be an issue. In Santa Clara County the Valley Transportation Authority (VTA) is not only responsible for all light rail, buses and shuttles but also highways. VTA light rail connects to Caltrain at the downtown Mountain View Station and at Tamien Station in addition to bus connections at each station.

The San Francisco County Transportation Authority and Samtrans are cooperating to improve the Bay Shore Station at the county border with connections to a new Third Street light rail. A Transportation for a Livable Community (TLC) grant from MTC will pay for a design charette. As better transit is often needed to mitigate the traffic impacts of new development, San Francisco hopes developers will provide the local match money for grants to make the hub improvements. The incentive may be blunted by new state legislation to exempt developers from traffic impact mitigation in transit oriented development areas (SB1656).

The Capital Corridor service operated by Amtrak has ten stations in the Bay Area. Amtrak provides motorcoach connections to Bay Area stations from Eureka (at Martinez), from the San Francisco Airport (at Emeryville), and from Santa Cruz, Monterey, and Santa Barbara (in San Jose). Emeryville and San Jose depots also have

Greyhound connections. The only common hub with BART is in downtown Richmond; an Oakland Coliseum/ Airport BART connection is now sought. The Capital Corridor connects with the Altamont Commuter Express in Fremont (Centerville) and at Great America and Diridon stations. A (long) pedestrian link to ferry is possible at Oakland's Jack London Station.

The four staffed Bay Area stations -- Martinez, Emeryville, Oakland and San Jose (Diridon) --are either new or refurbished. The buildings evidence the sense of civic pride stations have evoked over time. Intensive new commercial development has occurred around the Emerville Station and blocks of high density "live-work" condominiums have been developed near Oakland's Jack London station.

The current Capital Corridor Business Plan evidences attention to onboard passenger amenity in information displays, lavatories, telecommunications, food service, discounted BART ticket sales and free bus transfers to some operators. The service has proved the most successful recently in attracting ridership. But there are no standards for the hub facilities beyond the platform. Station agreements are individually negotiated with all maintenance usually provided by the local transit operator or city. Only the Diridon Station in San Jose allocates station expenses based on ridership, perhaps a model for more routine provisions for hub expenses. Many other communities besides Union City are vying for stops. Solano County anticipates new stops at Dixon, Fairfield, and Benicia. Appropriate land use planning at hubs was not articulated as a criterion for Capital Corridor service.

Another commuter rail service started in 1998 to implement a 1990 San Joaquin County ballot measure K: the **Altamont Commuter Express** (ACE). The ACE train schedule and route indicate its primary purpose of bringing workers in from eastern Alameda County and the Central Valley to Silicon Valley industry, with free shuttles to work sites at two destination hubs. Stations are located where the tracks happen to be, and ACE riders drive an average of eleven miles to a station. ACE was the only transit web site where promotion of Location Efficient Mortgages (LEMs) was seen. This is a financing technique intended to help people afford to live nearer to their jobs. As sixty percent of riders report that the availability of ACE service influenced their housing choice, LEMs may be promoting housing construction in the Central Valley for Bay Area commuters. ACE has no common hub with BART. As the prospective BART route south into Santa Clara does not go to the major employment centers, ACE regards itself as serving a different set of passengers.

Reestablishment of rail hubs and service in Marin and Sonoma has been sought with sales tax measures but as yet there is not the 2/3 majority required for a project thought to allow more growth. A Marin terminus at the Larkspur Ferry or future San Quentin ferry has not gained local approval so the terminus currently would be San Rafael. Rail from Suisun City to Napa Junction is being studied in Solano County; further extension to Ignacio Junction would link with Sonoma-Marín rail.

5. **Bay Area Rapid Transit's** 39 electric rail stations seem viewed as the primary hub system of the region, though one of the county systems it connects to -Muni---carries more than twice as many riders. As only three counties in the Bay Area voted to pay for BART in 1962, BART tracks were limited to San Francisco, Alameda and Contra Costa Counties until the recent extension to the San Francisco Airport in San Mateo County. Express buses to BART stations connect to the other counties; in all, BART connects with 18 other public transportation systems. The BART station at Hayward also serves Greyhound.

As BART has unique rail and more compelling grade separation and fencing needs than conventional rail, its routing was not as influenced by existing rail routes. BART and Valley Transportation Authority (that will manage the BART extension in Santa Clara County) both indicate that the local jurisdiction is the prime determinant of hub location and development.

Available capital funds are sometimes a factor. The new BART station at Bay Point was established when Contra Costa Measure C funds voted for extension of BART to North Concord exceeded the cost of that one hub so the line was extended further rather than using feeder buses into existing BART hubs.

BART stations typically have multiple bus bays that facilitate transfer between buses as well as transfers to and from BART. BART expects local bus systems to be organized as feeder lines as the Contra Costa County buses are, timed to meet as many trains as possible. BART riders are regarded as discretionary transit riders who require good service, so local bus timed transfers for the transit dependent are sacrificed, if necessary, to meet the train schedule. BART's free parking, however, dampens the incentive to use the bus to connect to BART. AC Transit, which serves most of the inner East Bay and has almost as many riders as BART, has taken issue with BART providing more free parking than any other transit operator in the country as well as with threatened dislocation of bus bays in order to pursue station area development. From BART's perspective, the failure of AC to structure more of their bus routes as feeder lines to BART hubs, is an issue; the longer AC bus routes were said to be often late in meeting BART trains.

BART stations that serve as intercounty hubs are those with easy access like El Cerrito del Norte and Pleasant Hill. Stations in the same vicinity like downtown Richmond and Walnut Creek are more suitable as destination hubs but not as accessible from the freeways. Consideration of hub access by motorists and more recently by express buses seems to push evolving hubs towards the freeways where amenities and walkable destinations are few. Recent Pleasant Hill station planning seeks to develop supportive land use (ownership housing) and pedestrian amenities (plaza) in the existing context of wide, fast arterials, parking lots and set back development. Implementation of the Pleasant Hill plan awaits private development initiatives.

BART has no standards for land use at new hubs but has identified a process for developing BART station areas that begins with local government and community

support. Some of the newer stations have had parking and bus bay standards imposed through their individual EIR processes. The very different land use treatment in Dublin and Pleasanton on opposite sides of the same station was cited to demonstrate local planning discretion. On Dublin's more intensively developed side, 30 year ground leases paid for part of the station which other rail operators see as a model. Acceptance of housing has been a persistent problem. Planned housing at the Castro Valley station was reduced and rejected altogether in planning the North Berkeley BART station long ago. BART policy of requiring parking replacement is another stumbling block. It delayed development at the Fruitvale Station and made a housing component at El Cerrito Plaza uneconomic.

Stations with little or no parking in the denser urban areas actually serve more passengers. Market Street in San Francisco illustrates a linear hub form that has subterranean levels of BART and light rail with bus transit from several counties along the street (Vallejo even has buses at the foot of Market to catch Vallejo ferry overflow). Balboa Park is a relatively invisible BART hub with good transit connections that is being redesigned for better pedestrian connections to City College; the investment reflects a less "Muni-centric" approach in San Francisco, seeking the best trip options from the passenger point of view. The Rockridge BART station is a model of pedestrian and bus accessibility with parking tucked under the freeway to minimize disruption of community fabric. Hayward has new townhouses and a grocery at its downtown station. Fruitvale (Oakland) is building a community center with health care and housing. Richmond plans a cultural center and new housing at its downtown station.

6. New Rail Hubs nearing completion will join conventional and BART rail services. The Caltrain Millbrae Intermodal Station will intercept the new BART line to the airport. This station is to include computer stations for transit information as will the Diridon hub, which is to be another Caltrain -BART link with the completion of BART to San Jose. The different policies of the two transit systems with regard to food and drink and bathroom access remain to be resolved.

Palo Alto is planning its "dream hub" on the Caltrain line, stimulated by money included in the last Santa Clara bond issue in order to provide a geographically balanced array of projects. Stanford University will be a major participant.

Other new hubs planned by the Valley Transportation Authority for the BART extension are in Milpitas, Berryessa, Five Wounds (Alum Rock), and Santa Clara. They will intersect light rail at Montague/Capital and at Five Wounds (Alum Rock).

BART is studying extensions out I-580, Route 4, I-880 to Vallejo or Benicia. In the Route 4 and I -880 corridor, park and ride locations seem to be considered for hubs indicating some intent to service growth extending towards Sacramento by intercepting car commuters rather than an intention to identify centers that should be connected by rapid transit. In Livermore, a BART study did find that a downtown location would attract the most passengers but there is local resistance citing traffic generation. The only BART tail said not to be under study for expansion is Millbrae. Federal funds could not

be justified if Caltrain electrification with grade separations is funded, as shown in the current regional plan; the services would be considered redundant in applications for federal funding.

7. **Light Rail Hubs** are important elements of San Francisco and Santa Clara County transit systems interwoven with bus lines to cover large urbanized areas. In San Francisco six lines form the trunk of the system under Market Street with hubs at all four BART stations. The branches serve southwest San Francisco and the waterfront. There are 16 light rail stations and innumerable stops with transfers to bus routes. In all, Valley Transportation Authority in Santa Clara County has 32 light rail stops with connections to bus. Light rail extensions being developed in Santa Clara County by VTA will include new Vasona and Eastridge bus-light rail connecting points.

8. **Bus Hubs** are not prominent, considering that buses carry most of the transit riders. The more urban bus systems consider each bus stop a transit portal and are seeking more bus shelters that include transit information. AC is providing new schedule and map cylinders on bus stop poles at some locations. Such installations are "marketing" rather than a standard transit element.

A new bus hub on Doyle Drive in San Francisco to serve Golden Gate buses, Muni and park service shuttles and tour buses is to allow space for tourist/recreational bus service as well as a hub closer to the edge of the transit service area for transfers. In Marin, a new bus hub at Marin City/Manzanita may include recreational service for the park system around Mt Tamalpais.

Golden Gate Transit has established different arrangements Marin and Sonoma Counties. In Marin, communities contract with Golden Gate for additional desired transit service. In Sonoma, many cities have their own services with Golden Gate providing intercity service. The hubs connect many operators and routes with few apparent issues. The downtown San Rafael hub, provided by that city, connects 21 bus routes, Greyhound and two airport services. The bus hubs typically correspond with the original town centers to more readily accommodate restoration of rail passenger service. An exception is the Santa Rosa Transit Mall which is on the other side of the freeway from the rail station. Consideration is being given to moving the bus hub to the rail station side as both sides of the freeway have commercial uses supportive of a transit hub. New hubs in Petaluma, Cotati, Windsor, and Healdsburg have been funded.

To a greater extent than even Sonoma County, Solano County is dependent upon individual cities contracting for bus services. There is no county intercity system comparable to Golden Gate. The only large bus service is that of the City of Vallejo, oriented to the hubs at the Vallejo ferry and a new Sereno bus center. A new Fairfield bus hub to serve Fairfield -Suisun City Transit has recently been developed and is anticipated to serve expanding intercity service negotiated with potential operators. Bus stations for express service along the freeway corridors are proposed.

In Alameda and Contra Costa Counties the most commonly mentioned new bus hub may not even be a hub given its land use characteristics. The park and ride at the Richmond Parkway has been developed to divert drivers into express buses. The Contra Costa and Alameda County Congestion Management Authorities and MTC have worked together to fund new buses and provide parking and Caltrans has provided special freeway on ramps to the diamond lane to improve trips times. It was originally hoped that Hilltop Shopping Center would accept this bus hub so that it would also generate ridership as a destination and secure the transit hub with more activity. (Caltrans has discontinued park and ride lots because of liability costs). Instead, a highway patrol station was sited at the facility to create more security. An complete Express Bus system utilizing special bus access lanes to HOV freeway lanes is planned to provide competitive transit travel times on the long trips in the I-680, I-880 and Route 4 corridors.

Union City is building a bus hub at Union Landing "power center" and ACTransit built one at Eastmont Mall, both partly for reasons of economic development and provision of driver facilities. Efforts to establish hubs at other shopping centers have been rejected. The idea of having a bus hub in an existing building in downtown Oakland was rejected by AC Transit because they felt it would reduce bus visibility and lengthen trip times. Instead a bus shelter is being improved at a Broadway street hub to provide bus service visibility.

The Transbay Terminal is the anomalous regional bus hub, originally the light rail connector across the Bay Bridge and now long awaiting conventional rail connection via Caltrain extension. Discussion of again reinstituting rail on the Bay Bridge to alleviate the capacity problem on the bridge and in the BART tube has died as the east span design chosen and finally undertaken will not carry rail. The Transbay Terminal also figures in a BART alternative to branch the BART tube offshore of the Embarcadero gridlock, bringing a new BART line into the Transbay Terminal as its first stop and then crossing under the Market Street hub and up the Geary corridor. Shutting down the BART tube for this construction and getting under existing construction may not be feasible.

The Transbay Terminal is the poster child for failure to plan and build transit hubs regionally. Although clearly a vital link between the East Bay and the Peninsula, it is considered the responsibility of San Francisco. Its development currently depends on private development of intense mixed uses at the hub to pay for it - currently not a promising market. The tired terminal may just continue as a bus hub for expanded express bus service from the East Bay. Greyhound may even move its main station to West Oakland if better facilities are funded there.

How Are Riders Connected to Transit Hubs?

In order to facilitate travel in our region the Metropolitan Transportation Commission has concentrated on getting a common fare card, Translink, a common website(www.transitinfo.org) and a common phone information system (817-1717). Hopefully these information linkages will demonstrate an ability to increase transit use. A limitation on the utility of phone information is that it is typically not available weekends

or nights when there is the least assurance that the bus will ever come. Computer trip planning assumes riders are connected to computers. BART has had computer information access at some hubs but only the station agents seem to appreciate them (they can point people towards the device and return to their other concerns). New internet kiosks for transit information at Millbrae and Diridon would be expected to be more user friendly and more passengers would likely be familiar with computers.

The computer and phone systems of passenger guidance seem to require passengers to be destination- oriented, with specific times and locations for trip start and specific destinations as if the passenger were taking off by commercial jet. For travel on the surface, many more factors are relevant. Relative trip times, sense of orientation and security, cost, and views matter. Choice of carrier --bus, streetcar, train, ferry-and amenities of the stations and vehicles matter. And possibilities of linking desired stops into one trip matter. The relative importance of each factor is unique to the individual and to circumstances as needs, weather and congestion shift. A regional transit information system that allows passengers to construct trips that best meet their needs at the time they are ready to go seems essential.

Brochure maps of regional transit providers are now fairly consistent in mapping techniques so that riders who are good at map reading and who carry them may be able to identify suitable routes for their trip. But signage and station configuration often fail to assist transferring passengers in locating bus bays. Display maps at transit hubs are not universally available nor are they consistently scaled, composed, placed or lit. Debates about the number of languages in San Francisco has held up signing for the most sought tourist destinations.

Wayfinding techniques in other countries allow most travel to proceed smoothly without dependence on individual maps or palm pilots. Display maps, arrangement of concourses, common symbols and text conventions, sign sizing and placement allow passengers to flow in the right direction to intercept their carrier. Only the Capital Corridor staff referred to international signing conventions. They will be using regional mapping on one side of display signs and local mapping on the other in new platform installations. Berkeley was acknowledged for a handsome display map at its central BART hub; its hotel tax also funds a staffed information office with the international "i" symbol.

Several people interviewed recalled efforts at MTC to develop common regional transit signing. MTC records indicate that there was an effort in the eighties to develop regional signage conventions as part of a federal grant. The lack of consistent use of signage and symbols for regional carriers results in each jurisdiction making its own decisions about languages, colors, symbols and sign placement. Confused passengers attempting to make a transit connection have been shown to move from self-loathing for stupidity to anger and annoyance. Napa County recognizes the problem on its website and has volunteer "Transit Ambassadors" to help people figure out the routes, fare collection, and transfers. A more scientifically derived set of international symbols and understandings about sign legibility and placement is needed.

Urban design is even more key. In counties with high levels of transit use, transit hubs are typically designed as a common point of reference. The urban design of a new town in Holland might include an urban limit line centered on the transit hub with a waterway axis and a rail axis intercepting near an "eyecatcher" tower at the station. A Japanese suburb would have a shopping street leading to the transit station with a distinctive sculpture as a meeting place.

Are There Better Models?

It was surprising that so many of the transit agency staff interviewed felt that there were no models elsewhere for them to emulate. The most common explanation was that the area they served was unique so there were no models elsewhere. The second most common response was that their service was the best.

Some did mention the strong points of other transit services. San Diego was noted for its common logo for all operators, common transfer policies and relatively good service for a city of the same density as Santa Clara County. Los Angeles Metrolink was admired for having managed 49 transfer agreements with different operators allowing easy bus transfers. Portland was mentioned for its use of international symbols and wayfinding techniques and for the stronger regional government and land use planning that makes transit planning more effective. The Washington DC Metro was noted as having stronger regional agreement on high density land use planning at stations and paid parking.

Abroad, cities were mentioned included Vancouver, Montreal, London, and Paris; because Paris is three times as dense as San Francisco, it was not considered a real model for the Bay Area. The Water Transit Authority (WTA) thought Sydney, Australia provided the best comparability for physical setting and density. Both Australia and Canada, largely developed in the automobile age, have twice the transit ridership.

Although none of the operators mentioned another Bay Area transit system they would emulate, it seemed to the interviewers that some agencies/counties had developed more systematic hub planning or devised governmental structures that could integrate transportation decision making for many jurisdictions and modes. Perhaps the following examples will be considered by others around the Bay:

- To locate bus hubs, Golden Gate estimates the number of people at points where transportation corridors intersect and computes the transit dependency of the areas served. Their maps clearly indicate hubs as "Major Transfer Point." The hubs are typically in town centers and can serve the existing rail line if returned to passenger service. The land use analysis that was part of the rail study systematically identified underutilized land that could support new transit oriented development. "
- To design hubs, the Water Transit Authority has commissioned an excellent set of design standards for ferry terminal access that could be very useful for any major transit hub. The design standards prioritize access by pedestrians, then bikes and transit, then kiss and ride and last parking and emphasize passenger comfort

including that of good orientation. Land uses that complement hubs is also covered.

- To coordinate transportation investments, the Valley Transportation Authority integrates all transportation services and infrastructure in Santa Clara County. VTA rests on sensitive structuring of the decision making body and its advisory committees to provide both representation for each city and voting weighted by population. The model may be one for the region as a whole if a regionally elected body is not feasible.

Suggestions

Hub planning is a necessary part of transit planning in a region with so many transit providers. We suggest the following be considered by MTC and its agency Partners:

1. Revise regional transit diagram to identify major hubs linking transit services.
2. Develop a prospective hub diagram to include desired future hubs connecting major destinations/ town centers and/ or transit lines and work with local jurisdictions to design and site appropriately.
3. Include prospective ferry and high speed rail hubs established in state planning efforts. Work with local jurisdictions to protect key space for implementation.
4. In funding decisions, compare use of resources for improving existing hubs and transit service with proposals for service extension. Consider the cumulative effects on land use.
5. Adopt regional transit signing standards consistent with best international practices including information displays within terminals and their siting, directional signs to bus bays/ piers/ platforms, information displays on platforms and night lighting standards.
6. Adopt standards for major transit hubs including pedestrian access, seating, climate protection, restrooms, refreshments, proximity and number of bus bays, and appropriate adjacent land use.
7. Adopt regional understandings on the use of transit funds for parking.
8. Assess the implications of ballot box transit planning and consider alternative regional transportation funding sources such as gas tax and congestion road pricing.

Postscript

A San Francisco Bay region organized around vibrant transit hubs is more than a transportation issue. Having centers that correspond to our local governmental jurisdictions reinforces the identity of places and the social connections of those who chose to live there. It allows focal points for meeting people and centers of information on local destinations as well as transit to jobs, shopping, services or events elsewhere. A

good transit system allows us a better environment, society and economy. We increasingly recognize that failure to provide adequate transit services denies opportunities to many in our society.

A process for planning such hubs requires balancing local community preferences that express community identity and access needs with regional transportation needs and efficiencies. The present method of establishing transit expansion by county ballot box packages is not structured to recognize regional needs and may not focus on community needs and preferences either. Many have observed that the Regional Transportation Plan is a list of projects and not a physical plan for regional transportation designed to achieve the objectives espoused by the Metropolitan Transportation Commission. This inquiry into transit hub planning has helped illuminate the evolving regional transportation planning process that produces such a "plan".

The ability to produce a map that shows a system of regional transit connections and to produce a plan for measurable improvements in transit connections is critical to attracting riders. The extent to which an intelligible network links workers, shoppers, visitors, and participants to their destinations in turn is related to our collective ability to grow without degrading the environment. We need a regional map reflecting regional agreement on our future regional transit structure.

Regional standards for guiding transit passengers with proven wayfinding techniques and signage conventions is another vital element of regional planning. The investment in common fare ticketing, Translink, will have greater returns with such standards.

Financing issues are obviously the most difficult in our post Prop 13 world. State League positions on appropriate public financing have been often overlooked in our eagerness to approve needed funds for transit and other public goods. Reliance on sales tax initiatives is further pushed by loss of property tax to the State. The sense that the voters know what they are getting for their money with sales tax initiatives may be misplaced because of complexity that cannot be adequately explained in a voter pamphlet or account for shifting circumstances. For example, the first Alameda Measure B had funds for I-880 that were not needed because of federal funding of the same project and included a misleading 238 project map and description now in the court system.

In this climate, too much energy has been spent on competition between the largest transit agencies and too little on drawing more passengers into a whole transit system. As long as major components of the system are in contention and individual cities are responsible for "finding" money for regional hubs, the essential cognitive map for potential passengers cannot be completed nor can the network be improved cost-effectively.

Regional decision-making must be strengthened if regional transit is to serve us well.