

# Memorandum

# DRAFT

**TO:** Doug Kimsey  
**FROM:** Michael Fischer  
**DATE:** March 23, 2004  
**RE:** Task 9 Technical Memorandum – Issue Identification and Development of Preliminary Solutions/Strategies

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This technical memorandum presents results of Task 9 of the San Francisco Bay Area Regional Goods Movement Study. This is the first task in Phase 2 of the study. The purpose of this task is to review the information compiled in Phase 1, compile a list of critical goods movement issues in the Bay Area, and to develop solutions aimed at addressing these issues.

## Critical Issues

In Phase 1, four broad issue areas were identified, providing a framework for analysis. The four issue areas are:

1. **The need to preserve mobility and safety in intra-regional corridors.** In Phase 1, it was determined that a significant fraction of regional goods movement is associated with providing goods and services to the consumer markets in the region. This activity occurs over a network of highway corridors that serve population centers and, as such, they also carry substantial commuter traffic. Much of this intra-regional goods movement involves local pickup and delivery and local product distribution activity. I-880 plays a major role in this system serving the largest share of intra-regional flows between Santa Clara, Alameda, and Contra Costa Counties. U.S. 101 is a second major intra-regional corridor with secondary roles played by I-80 and I-680.

Dealing with congestion, safety, and reliability problems in a system with extremely constrained right-of-way are the critical issues that comprise this broad issue area.

2. **Problems in inter-regional corridors.** Inter-regional corridors serve two distinct functions in the Bay Area goods movement system. First, these corridors provide a critical trade link between this region and the rest of the country. The Bay Area produces nearly \$200 billion of goods in important manufacturing industries, including transportation equipment, electrical machinery and electronic equipment, and food products. Bringing these products to market and providing supplies to them are critical functions of the inter-regional corridors. Likewise, these corridors carry consumer goods for distribution in the region. This second trade linkage has a particularly important component in the links between the Bay Area and

the northern San Joaquin Valley. Many regional distribution facilities serving the region are located in the San Joaquin Valley.

While I-80 provides a direct link to the national long-haul highway network, this tends not to be a preferred route due to weather and topographic factors. In addition, the presence of major trade flows to and from Southern California and the Pacific Northwest tends to make the I-580 connection to I-5 the most critical inter-regional connection in the Bay Area. The fact that this route also functions as the distribution link with the Central Valley and as a major growth corridor for commuter traffic makes congestion a particularly serious problem. There are only limited multimodal alternatives to this connection

The region's domestic air cargo connections, which tend to be strongest out of Oakland and San Jose, are also experiencing growth pressures. San Jose has limited expansion possibilities and lack of space for expanding support facilities constrains both airports.

- 3. Congestion and land use conflicts around the international gateways and needs for access improvements.** The Bay Area is an important international gateway on which the rest of the country and the region rely for trade connections. The region handles over \$30 billion in air cargo exports and over \$10 billion in marine cargo exports, including products such as industrial machinery and computers, electrical machinery and electronics, and scientific instrumentation. This explains the strong role of the international airports in the regional goods movement system. Unlike the Southern California ports, exports from the Port of Oakland exceed import volumes. But like the airports, growth at the Port faces some significant community impact issues. Real estate markets are pushing land to higher value uses and land use controls are making it very difficult for port-related businesses to remain in proximity to the Port.

In addition to the space and growth constraints already cited, the Port and airports suffer from congested access routes with limited availability of alternative modes to address the access problems. The Bay itself provides an obstacle in connecting all elements of the regional economy to SFO. Congestion on I-880 is also a major issue for Port of Oakland access.

- 4. Land use and real estate market problems that are leading to lack of space for expansion of goods movement businesses, and ultimately leading to higher costs, more congestion, and higher emissions associated with trucks operating from more remote locations.** The land use and real estate market pressures already described in reference to the international gateways present problems for goods movement-oriented businesses that support all aspects of the region's freight transportation system. Phase 1 showed that the largest share of industrial and warehouse space is still found in the central Bay Area and the demand for this type of space is still intense. But the growing conflicts with expanding residential and commercial development in the same locations have created a serious problem for goods movement businesses. Movement of these businesses to outlying locations is likely to increase truck VMT, diesel emissions, and the cost of goods.

Each of these issue areas was analyzed in more detail for this task and the results are presented below.

### *Issues in Intra-Regional Corridors*

The major intra-regional corridors, I-880/580 and U.S. 101, serve a multiplicity of transportation needs. They serve as major commute corridors with spreading peak-hour congestion. They serve as access routes to the region's international gateways. And they carry a substantial amount of truck traffic serving local distribution, pickup, and delivery. While hourly truck counts in these corridors still exhibit the classic mid-day peaks, the spreading of the commuter peak periods, as well as the need for trucks to travel in the shoulders of the peak in order to counteract the impacts of congestion, is creating growth in peak-period truck traffic and has created serious capacity needs in these corridors. This is a particularly acute problem in the I-880 corridor, where congestion exists throughout the day.

Unfortunately, these corridors are also highly constrained with respect to the types of options that can be pursued to solve these problems. Local distribution activity, by its nature, will always involve trucks. No other mode provides a cost competitive and reliable enough alternative. The ability to add capacity in these corridors is highly constrained because of how built out the adjacent communities are.

The types of issues that this raises for goods movement planning include:

- The region needs to wring as much efficiency and effective capacity out of the system as it possibly can through system management. As critical as overall recurrent congestion is in these corridors, poor reliability is an even bigger problem. Shippers and carriers can plan for recurrent congestion. While it may add costs to operations, it is at least predictable. Frequent and extended periods of non-recurrent delay, often associated with accidents, creates unreliability that can have huge cost consequences for shippers and carriers alike. The I-880 corridor has one of the highest accident rates in the State and many of these accidents involve trucks. As an old, built-out corridor, there are numerous design deficiencies and operational inefficiencies. There is not a continuous system of lanes for trucks that runs the length of the corridor, there are a number of short auxiliary lanes, and there are dangerous weaves.
- Intelligent Transportation Systems (ITS) offer one alternative to capacity expansion that could address some of the issues. The use of ITS, especially Advanced Traveler Information Systems and incident detection and management systems could manage existing capacity more effectively and reduce the reliability consequences of incidents.
- There are a number of places where local access from the freeway system to major truck activity centers needs improvement. One focus needs to be on improvement of the local street system and truck routing that provides this access. Deficient interchanges and lack of connected parallel arterials tend to create more congestion and poor operational conditions on the freeways. Locations in the vicinity of the Port of Oakland and in the industrial areas

in the north end of the I-880 corridor (to-from I-580) and the south end in the growing population Cities of Fremont and Newark are particular issues.

- As noted previously, the intra-regional corridors experience particular time-of-day congestion problems that may require creative system management strategies to gain more effective capacity. This might include addressing hours of operation constraints at the shipper/receiver locations along the corridors.
- One way to address the capacity constraints of the freeway system, while improving overall system reliability and local accessibility to trucking activity centers, would be improved continuity of the regional and subregional arterial truck route system adjacent to the freeway. However, the cities through which these roads travel do not have any mechanism in place for coordinated truck route planning.
- Even with greater system management, there will continue to be a need for spot capacity improvements in the intra-regional corridors to address specific bottlenecks. Some of the more prominent of these exist along heavily congested roads, such as I-880 near the airport and seaport; the I-80/I-580 merge; and on and nearby to major freeway-to-freeway interchanges that are goods movement corridors, including I-880 and Hwy 101, I-880 and I-680, I-880 and Hwy 238, and I-580 and I-680.

### *Issues in Inter-Regional Corridors*

The inter-regional corridors also suffer from serious congestion. The most notable example of this occurs on I-580 connecting to the San Joaquin Valley. I-80 also experiences congestion, but it has a particular set of bottlenecks that need to be addressed (for example, the I-80/I-680/SR 12 interchange). As truck-oriented uses spread out into Solano County (as has already begun to happen), the congestion problems on I-80 will get worse.

One of the biggest problems with inter-regional connections in the Bay Area is just how few alternatives there really are. The options for multimodal connections are limited and there is really only one highway connection to I-5.

The types of issues this raises for goods movement planning include:

- The need to add highway capacity in connector corridors. The need for additional capacity in the I-580 corridor is very clear. Another alternative would be to improve routes connecting to I-5 in the South Bay.
- Lack of short-/medium-haul multimodal alternatives. Presently there are no non-highway-based services providing connections to the San Joaquin Valley and rail connections to Southern California are also limited.

## *Issues in International Gateways*

The international gateway system is very important to the Bay Area and it is fairly dispersed throughout the region. As noted above, the ability to expand and to provide adequate support facilities and access are major issues.

The types of issues raised for goods movement include:

- Time-of-day congestion problems are becoming more important in international gateway access corridors. Distance of ancillary facilities and shippers from the Port of Oakland is requiring trucks serving these shippers to be on the road earlier in the day, and this causes conflict with the commuter peak. Similar problems occur for the evening cutoff for air cargo shipments from the region's airports.
- Landside capacity for support facilities is a growing problem for the region's gateway facilities (both air cargo and the seaport). The availability of air cargo storage and sort facilities constrains future growth in international cargo shipments from SFO, and the lack of land for support facilities associated with the Port of Oakland is a constraint for this facility.
- Access to the gateway facilities is also a concern as the freeway and arterial corridors that access the Port and the airports tend to be congested and unreliable.
- The Port of Oakland has the potential to grow as a significant player in Pacific Rim trade. This provides a needed alternative as congestion continues to impact the San Pedro Bay ports in Southern California. But rail access needs to be maintained in good operating condition. Rail capacity in and out of the Port is beginning to become bottlenecked both south and north of the Port. A contributing factor is the growing demand for access to the freight rail system from the Capitol Corridor system. While rail capacity may not be a significant constraint to Port growth today, it is likely to impact the Port's role as a Pacific Rim gateway in the future.
- There is growing conflict between autos and trucks accessing the areas around the gateway facilities. The City of Oakland is interested in growing the area around the Port (Jack London Square) as a tourist and recreation destination, and this creates serious conflicts between trucks and autos and exacerbates delays at rail grade crossings. Growth in passenger activity at SFO is likely to create additional conflicts between trucks and autos accessing the airport.

## *Land Use and Goods Movement*

Phase 1 indicated that much of the space and demand for goods movement-oriented land uses continues to be in the inner Bay Area. This is also the area that is expected to see the greatest growth in demand for residential and commercial uses – higher value uses that are sought after by the cities in these corridors. This is putting enormous pressure on goods movement-oriented uses to expand or relocate into the outlying areas, particularly along the I-80 corridor in Solano

County and along the I-580 corridor into San Joaquin County. This pattern may be further exacerbated by the regional Smart Growth Initiative.

The impacts of this type of development pattern are not clear. While relocation/expansion of goods movement-oriented business to the outlying areas is likely to put more trucks on the road in highly congested commuter corridors during the commuter peaks, generate more truck VMT (which could increase truck-involved accidents and increase highway maintenance requirements), generate more truck emissions, and drive the cost of transportation up for shippers, it is not clear how significant these impacts will be and whether the alternatives are more desirable.

While there may be regional benefits to preserving industrial and warehouse development opportunities in the central Bay Area, the incentives to cities are to discourage these uses when there is demand for higher value uses – both fiscal and community impact incentives.

The types of issues that this raises for goods movement planning include:

- Better tools are needed and further analysis is required to understand the impacts of land use patterns that push goods movement businesses to the outlying areas of the region and beyond.
- Unless there is regional intervention, there are likely to continue to be reduced land options for goods movement in the central Bay Area, which has implications for the ability to support the growing consumer demand in this area and the need to support the growth of the international gateway facilities.
- There is a need to develop a strategy to manage growth in the outlying areas of the region. Despite the fact that the greatest amount of population and employment growth in the region is forecast to occur in the central Bay Area, there is still likely to be explosive growth along the I-80 corridor, in the Sacramento Valley, and in the San Joaquin Valley. If this is also the direction in which goods movement-oriented businesses are likely to be pushed, continued auto-truck conflict is likely to occur. Managing this growth is going to be a critical issue for the region.
- It is likely that there are regional, state, and national benefits to preserve growth options for international gateways and other goods movement-oriented industry in the central Bay Area. But the incentives for these communities are to discourage goods movement-oriented use. Therefore, there will need to be a regional strategy (perhaps an industrial component of the regional Smart Growth Initiative) that creates incentives for those communities that are logical homes to goods movement to preserve these land options.

### *Potential Strategies*

In order to develop a set of potential strategies for addressing the major goods movement issues in the region, two approaches were used. First, a high-level strategic look at the regional goods movement system was employed to develop “big picture” strategies that tie multiple projects together and that identify major projects that may cut across county and even regional

boundaries. This high-level strategic thinking emphasizes the major themes that dominate goods movement in the region and tells this story in a way that may have more appeal for state and Federal funding agencies.

The second approach is a bottoms up approach. It recognizes that the discretionary spending for new projects in the region is limited and that the County Congestion Management Agencies (CMAs) play a key role in programming these limited funds. The CMAs, by nature, have a local perspective and their funding decisions are dominated by input from local constituencies. Freight issues tend not to receive a high level of attention in this venue. Therefore, one approach to developing potential solutions for the regional goods movement problems is to look at the projects that are coming up through the conventional CMA process, identify those with goods movement benefits, and work with the CMAs to ensure that these projects receive higher priority. This will bring the CMAs into the goods movement planning process incrementally. By linking these projects, as appropriate, to the high-level strategies, a comprehensive goods movement plan can be developed.

Each of these approaches and the potential strategies that have been identified are discussed below.

### **High-Level Strategies**

**Regional air cargo plan.** A major conclusion of Phase 1 was that air cargo plays a critical role in the regional goods movement system. In its peak year (2000), the international air cargo system in the San Francisco Customs District handled a higher value of cargo than any other mode and it was the leading air cargo customs district in California. Air cargo tonnage at the region's airports is expected to more than triple between 1998 and 2020. During this period, international freight will almost quintuple, growing to be almost equal to domestic freight tonnage. Strategies that ensure that the air cargo system is able to efficiently meet this growing demand will address both international gateway and inter-regional corridor issues.

Historically, the airports in the region have tended to specialize their roles. To some extent, this reflects the fact that most air cargo is still handled in the belly of passenger flights and SFO handles more international passenger activity than does OAK or SJC. SFO handles most of the region's international cargo and OAK handles substantial domestic cargo (including increased domestic integrated carrier operations). SJC handles more limited cargo volumes and is constrained to narrow body aircraft.

Currently, there is a Regional Airport System Plan (RASP) prepared by the Regional Airport Planning Committee and approved by MTC as part of the Regional Transportation Plan (RTP). The Bay Conservation and Development Commission (BCDC) is a primary audience for the plan and BCDC plays a primary regional planning role with land use jurisdiction over the first 100 feet inland from the bayshore. The most recent RASP does not include a significant air cargo planning component and there is no attempt in the plan to coordinate the air cargo activities of the three airports and to rationalize these to achieve more efficient growth, while minimizing truck impacts on access routes and freeways. As the role of air cargo grows in the future, this may become a serious deficiency of the existing airport planning process.

Projects and strategies that would specifically address the air cargo gateway needs of the region could include:

- **Development of a land use/industrial land preservation plan for the airports.** A major constraint for expanding air cargo activities at SFO is the lack of support facilities and on-airport land for expanding existing facilities. Much of the air cargo sort and storage operations have grown into “through-the-fence” operations off the airport property and there is limited room for expansion. OAK could expand its on-airport ancillary facilities, but only with the addition of new access roads and the development of more international air cargo facilities. Since most air cargo is time sensitive, the land needed for these activities needs to be in close proximity to the airports. A land preservation strategy needs to be examined and the role of a regional planning entity in protecting this land should be considered. The role of BCDC, in this regard, could be expanded.
- **Improved cross-bay connections among the airports and between shippers concentrated in the South Bay/East Bay and the international and domestic air cargo facilities.** Because the airports have specialized functions, international shippers in the East Bay must bring cargo across the Bay on congested and circuitous routes to get to SFO. Shippers on the Peninsula and in the South Bay have similar problems with domestic shipments out of Oakland. The lack of good connections among the airports makes it difficult to rationalize operations and make use of available runway space, schedule slots, and make best use of available space for expanded ancillary facilities. One proposal that should be investigated further is a cross bay freight ferry system. This could be designed to link SFO and OAK and better integrate services across the two airports. Additionally, by taking less time sensitive non-airport truck traffic off the Bay crossings, it could help alleviate some of the congestion now facing shippers going to the airports.
- **Direct access improvements at OAK.** In order to make better use of space at OAK for ancillary air cargo support activities, new access roads into undeveloped areas in the airport are needed. These include improvements to the Air Cargo (Infield) Access Road.
- **Coordinated regional air cargo plan.** This would expand the scope of the current RASP to deal with air cargo needs in a more coordinated fashion taking into account the special strengths and deficiencies of each airport with regard to their ability to handle the explosive growth predicted for air cargo.

**I-880 corridor plan.** I-880 is a multi-purpose goods movement corridor in the Bay Area. It is used by motor carriers to link with the rail terminals in Richmond and Oakland, with air cargo at OAK, and with ocean freight at the Port of Oakland. I-880 is used by shippers located within the Bay Area both to connect with these multiple modes, but also to deliver goods to destinations within the region. The multi-purpose role of the I-880 corridor in the regional goods movement system indicates that a variety of stakeholders at the local, regional, state, and Federal level have an interest in maintaining efficient good movement in this corridor.

The approach we are suggesting for the I-880 corridor is a comprehensive and coordinated strategy that includes bottleneck capacity improvements, operational improvements,

information technology applications, improvements to connecting and parallel arterials, and land use strategies. The organizational model for this strategy can be found in the FAST Corridor program in the Seattle-Tacoma-Everett area of Washington State. The FAST Corridor is similar to the I-880 corridor in that it includes connections to the ports and regional airport, as well as serving as a major commuter corridor. In order to plan strategically for this corridor, public and private agencies, including the state DOT, the regional MPO, counties and cities along the corridor, the three major seaports, and the two Class I railroads, formed a partnership that was implemented through a Memorandum of Understanding (MOU). The MOU specifies a process by which projects are selected by the partners based on comprehensive analysis of needs at the corridor level. The MOU then spells out a process by which the priority projects will be implemented as funding becomes available. Each partner agrees to play their role in projects as they move up the priority listing. This includes an agreement in principle as to the rough percentage funding contribution of each funding partner. The process provides assurances to each partner that their projects will eventually reach the top of the list and provides the incentive to stay involved and contribute funding, even when the project is not an individual partner's top priority.

An I-880 corridor partnership might choose to position the corridor initially as an International Gateway Corridor. This might create new funding opportunities under the proposed Gateway Initiative that is currently included in both the House and Senate Reauthorization Bills. It would also be consistent with the improvement concepts contained in the California Global Gateways Development report. Other aspects of the plan could focus on the intra-regional goods movement needs of the corridor.

A number of interchange and parallel arterial projects have already been identified in the I-880 corridor and were submitted to MTC by the CMAs for consideration in the RTP. Many of these projects are also being proposed by MTC for inclusion in the Inter-Regional Transportation Improvement Plan (ITIP). These projects are listed in Attachment 1 to this memorandum. Many of these projects are interchange improvements which were selected for inclusion in this strategy, because the interchanges are located where there are high-truck volumes on the freeway. The interchange improvements could improve operations on the freeway in the exterior lanes that trucks use even in cases where the interchanges themselves do not provide access to major freight activity centers. In other cases, the interchanges do provide direct access to warehouse and distribution sites, the port, and the airport. Taken individually, these projects appear to address only piecemeal aspects of the I-880 issues. However, when presented as a package and in combination with other elements of the strategy provided below, these projects contribute to an overall corridor plan that has the potential to achieve significant operational improvements in the corridor. Elements of the I-880 corridor plan would include:

- **Seaport access projects.** I-880 is the primary access route for the Port of Oakland. Therefore, most of the improvements that happen in the corridor will improve the mobility of trucks in the corridor. These projects include numerous interchange improvements in the corridor already under consideration for inclusion in the RTP and ITS improvements for the corridor as well. ITS improvements, including improved incident management, centrally controlled ramp metering, and ATIS systems, would all improve operations. The ITS improvements planned for the I-880 corridor can be linked to a variety of private informa-

tion technology systems operating at the Port of Oakland to inform truck drivers of conditions along the highway, and allow for truck drivers to optimize timing and routes to match real-time operating conditions. Currently, the Port has one of the most effective information systems for empty container management (the Synchromet system) in use in the U.S. Expanding this type of information systems approach and tying it to public ITS systems have potential to improve cargo security and efficiency.

- **OAK access projects.** OAK has recently undergone significant improvements for its access roads between I-880 and the airport facility. However, the majority of these improvements are focused on passenger access. Currently, the interchanges along I-880 can be improved for truck use by implementing the projects at Industrial Parkway, 29<sup>th</sup> Avenue, Marina Boulevard, Davis Street, and the I-880/SR 262/Warren Avenue interchange. Additionally, as mentioned in the regional air cargo plan, there is a need for new access roads into undeveloped areas of the airport, including the Air Cargo (Infield) Access Road.
- **Freight-friendly land use in the corridor.** Land use policy should be considered that continues to designate key locations for industrial use, including warehouses and distribution centers within the inner Bay Area. Such land use policy would reduce the amount of transportation demand for the goods movement industry. However, this effort must also be coordinated with the Smart Growth Initiative that is proposed for the region.
- **Managed lanes for long-distance truck trips.** Innovative lane management techniques can be used to improve the ability of I-880 to handle through traffic during off-peak hours for passenger cars. For example, carpool lanes can be considered for designation as a truck-only lane during off-peak times with lane changes designated only within certain portions of the corridor. This would likely decrease travel time for trucks in the corridor, and provide increased safety for all vehicles due to the separation of truck and auto traffic along the corridor.
- **Continuity in truck lanes throughout corridor.** Trucks generally prefer to travel in the second lane from the right when using interstate facilities. This allows trucks to operate in the slowest possible lane of traffic that does not interfere with vehicles entering and exiting the interstate. However, along I-880, this second lane of traffic changes often along the corridor due to a large number of lane drops and lane additions. One freight-friendly project would be to consider alternate designs that reduced the occurrence of lane changes for trucks that attempt to use this ideal lane of traffic along I-880. The freeway facility also has numerous interchanges with short ramps and short auxiliary lanes, creating unsafe weaving, a particular problem given the high-truck volumes. Construction of truck bypass lanes to move trucks through these interchanges without requiring them to contend with entering and exiting auto traffic could improve safety and reliability of the facility.
- **Improvements to alternative facilities and continuity of truck routes.** Currently, there are few viable alternatives for trucks serving the major industrial corridor along I-880 than to use the freeway. Truck routes on parallel arterials are not tied together in a coordinated system to facilitate truck movements. A number of cities along the corridor have expressed interest conducting coordinate truck lane planning, at least at a subregional level.

**Inter-regional gateway strategy.** The Bay Area's inter-regional corridors are critical for connecting goods movement activity in the Bay with supporting and related activities in surrounding areas and with the rest of the nation. I-80 will continue to serve as the primary gateway for traffic between the Bay Area and Sacramento and locations further to the north and east of Sacramento. However, the growth of distribution center and warehouse activity in the San Joaquin Valley has dramatically increased the importance of I-580 in terms of moving goods. I-580 is also the generally preferred route connecting the Bay Area with I-5. I-5 provides access to the huge Southern California manufacturing region and markets. Due to winter weather conditions and road conditions through the Sierra, many drivers move between the Bay Area and the central U.S. via I-5 to I-40, rather than using I-80. This has made I-580 the critical link between the Bay Area and the rest of the country at the same time that it is becoming a heavily congested commuter corridor and a major corridor for distribution truck traffic.

SR 152 connects the South Bay with the central portion of San Joaquin Valley. It runs directly parallel with I-580, but it is approximately 50 miles to the south. There are currently moderate amounts of truck traffic on SR 152, but the facility has the potential to be a significant reliever to I-580 in terms of attracting truck traffic from the South Bay to the Central Valley, Southern California, and other locations further to the east and south of the Central Valley. To realize this potential, improvements are needed to SR 152 where it runs over the coastal range into the Valley.

SR 4 runs parallel to I-580, but approximately 20 miles north of the interstate. It connects Concord with the northern tip of the San Joaquin Valley, including the Stockton area, a major warehouse and distribution center. SR 4 also has the potential to serve as a reliever route for I-580. However, like SR 152, portions of this road in its current configuration (running through the Delta east of Brentwood) are inadequate for heavy-duty trucking. In addition, the high level of residential development that has occurred along SR 4 in East Contra Costa County makes this one of the more congested corridors in the region. Major improvements to this facility would be needed if it is to act as a reliever route for I-580.

Potential projects and strategies that would address inter-regional corridor improvements include:

- **I-580 improvements.** This is the interstate facility that is most compatible for improvements that are truck-friendly. Truck climbing lanes along the Altamont Pass can allow for improved speed differentiation in the region. There has also been discussion in San Joaquin County about the development of a truck-only lane for I-580. Truck-only lanes on I-580 could be tolled in order to generate revenues that could pay for at least part of the costs of the new facility. This type of tolled truck facility works best when the trips are relatively long, so that interchange points can be limited (to reduce costs) and so that time savings are significant. According to the recent Caltrans Statewide Truck Travel Survey, the average truck trip in the corridor was shown to be 160 miles. In most of the corridor, it would be possible to acquire additional right-of-way without takings of existing residential or commercial properties. Since there is currently discussion of plans to acquire additional right-of-way for BART in this corridor, it would make sense to investigate the right-of-way needs of a truck lane at the same time.

- **I-80 improvements.** I-80 is an important truck corridor for the region. It is the most direct route between the Bay Area and Sacramento and the northern portion of I-5, which connects the Bay Area to the national interstate system. This is also a growth corridor for warehousing and distribution in Solano County. There are a number of particularly congested and operationally deficient interchanges (e.g., the I-680/SR 12/I-80 interchange), as well as a number of segments of the corridor where additional capacity is needed.
- **SR 152 improvements.** As mentioned earlier, SR 152 has the potential to be a reliever route for I-580. However, the 10 miles of this state route east of Gilroy is a windy, two-lane road that is very difficult to navigate for trucks and very difficult for both trucks and autos to operate on in tandem. Widening this route, along with an improved alignment, would improve its ability to transport goods. Along the remainder of this highway, it is four lanes, but it has several stop lights in the City of Los Banos that inhibit the free flow of the through traffic that dominates its routes. Creating a limited access freeway would also improve the flow of traffic on SR 152, decrease the mixing of local and through traffic in the City of Los Banos, and decrease travel times between the South Bay and the Central Valley. These projects could significantly reduce the freight demand for capacity along I-580, and may prove to be a less expensive option than capacity enhancements along the other east-west connector routes for the Bay Area.
- **SR 4 and SR 84 improvements.** These facilities will have to be upgraded to interstate quality in order to handle the freight traffic that is being generated by the growing populations surrounding the state routes. Additional consideration should be given to alignment and operational improvements that allow for the handling of east-west traffic improving the connection between the Bay Area and the Central Valley and the national interstate system.
- **Alternative mode improvements.** The California Inter-Regional Intermodal Shuttle (CIRIS) is designed to provide shippers with an alternative to trucking goods between the Port of Oakland and locations in the Central Valley. This option has the potential to divert some of the freight activity from the interstates. Previous studies have shown that shippers would prefer to incorporate the increased travel time associated with rail into their supply chain, so long as the rail option will enable cost savings for the total transportation costs of the goods. Similarly, inland barge options can reduce truck traffic along the interstates as well. The Port of Stockton has pushed for increased usage of its barge facilities and is targeting traffic normally destined for the Port of Oakland as a potential market.

**The Bay Area Freight Gateway System Plan.** It should be clear from the foregoing discussion that a central focus of goods movement planning in the Bay Area should be on improvements to the multimodal gateway facilities. By combining those elements of the I-880 corridor plan that focus on the area from Richmond to the I-238/I-580 connection, the improvements proposed for I-580, the cross-bay ferry system plans, and the short-haul intermodal connections to the San Joaquin Valley, the Bay Area could develop a comprehensive freight gateway program. This program would coordinate improvements and seek funding from a wider range of sources than are currently available through regional allocations. An early opportunity in this corridor would be ITS/CVO systems linked to cargo visibility and security systems around the Port of

Oakland. Making the Bay Area an early demonstration site for Secure Trade Corridor concepts could have strategic political advantages.

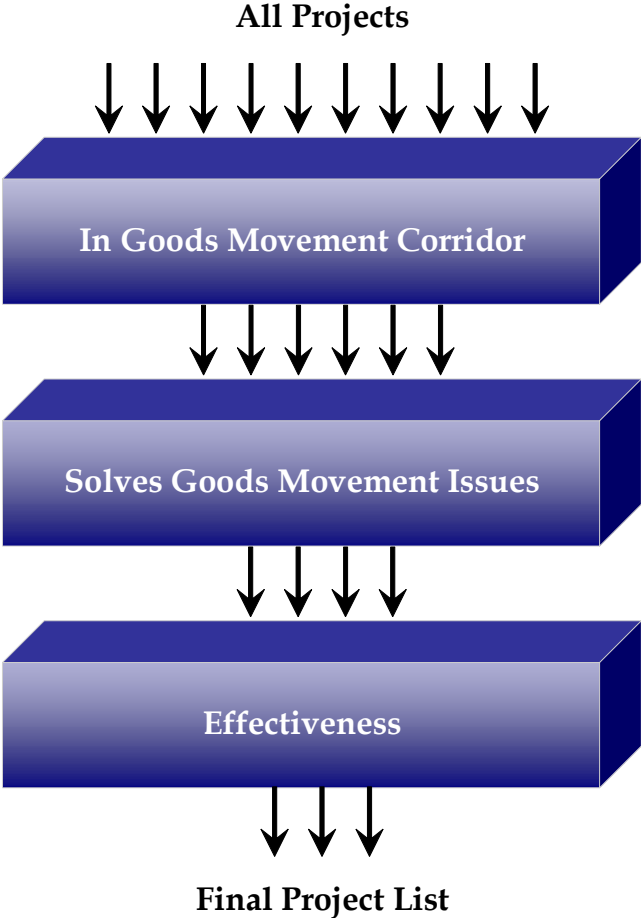
### *Integration with County-Level Project Evaluation Process*

County Congestion Management Agencies (CMAs) set local transportation investment priorities. Each of the CMAs is currently reviewing projects that have been submitted for possible inclusion in the RTP. These projects have also been submitted to MTC for evaluation against a set of performance measures that reflect the RTP goals as approved by the Commission. The consultant team is also compiling evaluative information about the goods movement benefits of the submitted projects so that the CMAs can take these benefits into account in their deliberations. The consultant team has set up a screening process for determining those projects that have potential goods movement benefits based on the following criteria (Figure 1):

1. The project is in a priority goods movement corridor as defined in Phase I of the Regional Goods Movement Study;
2. The project addresses goods movement issues as identified in this memorandum; and
3. Based on consultant judgment, the project has a strong likelihood of successfully addressing the goods movement issues.

The first two screens in the process can be objectively measured based on the location and type of improvement of each project. To address the third screen in the process, the consultant team interviewed several motor carrier operators to assist in determining the nature of the impact of the project on truck operations. Consultant experience with similar road improvements was also considered in determining the extent to which each of the remaining projects would be able to address goods movement issues. Through this process, the consultant team has identified 32 high-priority goods movement beneficial projects from the over 300 that have been submitted by the CMAs. The project list is shown in the Attachment 1.

Figure 1. Screening Process for Identifying Goods Movement Projects in RTP



## Attachment 1.

### List of Priority Freight Projects To Be Evaluated

RTP ID #	County	Project Title	Freight Issue(s) Addressed			Improvement Type
			Intra-Regional Corridor	Inter-Regional Corridor	Access to Int'l Gateway	
36	Alameda	<b>I-238/I-580 Truck Bypass Lane</b> - Construct a truck bypass lane from I-580 to I-238; current configuration requires trucks to merge into I-238 on the left from I-580.		●		Allow direct access through the I-238/I-580 Interchange to port facilities and intermodal terminals via I-238 bypassing currently congested location.
39	Alameda	<b>I-580 Eastbound Truck Climbing Lane Over Altamont Pass</b> - Construct EB truck climbing lane from between Vasco Rd and Greenville Rd and the summit of Altamont Pass.		●		Separates trucks from other vehicles, while ascending a significant grade in a heavily-used truck corridor.
41	Alameda	<b>I-580 Westbound Truck Climbing Lane (Ultimate Bypass Lane)</b> - Construct truck climbing lane on I-580 westbound between the I-205/Hansen Rd overcrossing and the summit of Altamont Pass.		●		Separates trucks from other vehicles, while ascending a significant grade in a heavily-used truck corridor.
362	Contra Costa	<b>Kirker Pass Road Truck Climbing Lane</b> - Add a truck climbing lane to Kirker Pass Rd from Clearbrook Dr to Buchanan Rd.		●		Separates trucks from other vehicles, while ascending a significant grade in a heavily-used truck corridor.
370	Contra Costa	<b>North Richmond Truck Route Project</b> - Extend Pittsburg Ave and either Seventh St or Soto St in North Richmond to create a new truck route for access between the North Richmond industrial area and I-580.	●			Connects current truck route to industrial area in Richmond.
27	Alameda	<b>ITS (Port of Oakland)</b> - Construct the infrastructure and variable message boards at three locations en route to the Port's Maritime Facilities.	●		●	Improve information availability to allow improved truck fleet management and routing at and near the Port of Oakland.
85	Alameda	<b>Oakland Airport Area ITS Project</b> - Design and implement ITS along 98th Ave and Hegenberger Rd from I-880 to OAK.	●		●	Allows the Airport to better manage air cargo into and out of OAK.

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			Intra-Regional Corridor	Inter-Regional Corridor	Access to Int'l Gateway	
	Multiple	<b>East Bay SMART Corridors</b> - Link various ITS elements along I-880 to the I-80/San Pablo Ave corridor.	●			Provide information to road user in heavily-used truck corridor.
86	Alameda	<b>Joint Intermodal Terminal (JIT) Expansion</b> - Capacity enhancements at the present JIT site and construction of support components at the Knight Yard located at the former Oakland Army Base. Proposed work includes additional container storage space, expanded utilities, and gate facilities.		●	●	Increase the capacity of the existing intermodal terminal, thereby, improving mobility for intermodal containerized freight.
84	Alameda	<b>Air Cargo (Infield) Access Road</b> - Widen and connect SR 61 (Doolittle Dr) with Earhart Rd and extend into the Infield area at North Field.			●	Provides new access point to OAK North Field from SR 61.
89	Alameda	<b>Realignment of Maritime Street</b> - Realign Maritime St and provide or improve access from the new road to the marine terminals and the JIT.	●		●	Improves access to Port maritime area.
82	Alameda	<b>Reconstruction of 7th St/UPRR Grade Separation</b> - Provide for a grade separation in the vicinity of 7th St where the UPRR tracks enter the Port's intermodal yards.	●		●	Improves intersection efficiency, thereby, providing greater capacity for the crossing.
83	Alameda	<b>Reconstruction of the Adeline St Overpass</b> - Replace the existing Adeline St overpass (over the railroad tracks at 3rd St and Adeline St) to reduce the grade of the overpass and improve structure, so it can accommodate overweight trucks.	●		●	Allows for usage of overpass for wider range of vehicles.
88	Multiple	<b>Railroad Corridor Improvements in Alameda and Contra Costa County</b> - Railroad track and signal improvements between Emeryville and Richmond, constructing new railroad track between Port of Oakland and Emeryville and grade separation structures in Richmond.	●		●	Preserves capacity for freight rail.

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n/a	Multiple	<b>CIRIS Inland Rail Shuttle</b> - Freight rail shuttle connecting the Port of Oakland with intermodal yards in the San Joaquin Valley.		●	●	Provides a freight rail option for transporting goods between Central Valley and Port of Oakland.
363	Contra Costa	<b>Lone Tree Way - UPRR Undercrossing</b> - Construct an underpass for Lone Tree Way at the UPRR junction.			●	Increase safety with grade separation at railroad.
45	Alameda	<b>I-880 Broadway/Jackson Interchange Improvements Phase 1</b> - Improve access and circulation at and near the Broadway/Jackson Interchange on I-880 by geometric enhancements.	●			Improve freeway access and local street circulation in a warehouse district between I-880/I-980, Downtown Oakland, Jack London Square, and the City of Alameda.
3	Alameda	<b>I-880/Industrial Parkway Northbound Off-Ramp</b> - Constructing a northbound off-ramp from I-880 to Industrial Parkway.	●			Relieves traffic congestion on I-880 and on Whipple Rd by providing a direct link from I-880 northbound to an industrial area.
15	Multiple	<b>I-680/I-880 Cross Connector Project</b> - Improvements to the following six corridors, all of which extend between the two existing North South Freeways: 1) Auto Mall Parkway; 2) Fremont Rd/Grimmer Blvd; 3) Mission Blvd/Warren Ave; 4) Scott Creek Rd/Dixon Landing Rd; 5) Calaveras Blvd; and 6) Montague Expwy. Improvements include roadway widening, grade separations, interchange operational and capacity improvements, creation of and improvements to HOV facilities, new freeway connections either below grade or elevated, roadway extensions and overcrossings, and TSM improvements.	●	●		Improve mobility options in an area with high-truck volumes.
75	Alameda	<b>29th/Fruitvale Area I-880 Access Improvements</b> - Reconstruction of both on- and off-ramps from northbound and southbound I-880.	●			Improve entrance and egress to I-880 in high-truck location, thereby, reducing congestion and increasing safety.

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100	Alameda	<b>Davis St/I-880 Overcrossing</b> - Replace existing overcrossing structure to provide higher clearance for I-880 traffic and additional travel lanes on Davis St to improve capacity and safety, along with ramp, intersection, and signal improvements.	●			Increase capacity on an overcrossing with high-truck volumes.
65	Alameda	<b>I-880/A Street interchange improvements</b> - Provide for two continuous through lanes and one continuous left-turn lane in each direction on West 'A' St between the I-880 southbound and northbound ramps.	●			Improve freeway access and local street circulation in a location with significant truck volumes.
101	Alameda	<b>Marina Blvd/I-880 Overcrossing</b> - Replace existing overcrossing with a new structure to provide higher clearance for traffic on I-880.	●			Improves intersection efficiency at high-truck volume location.
???	Solano	<b>Braiding EB I-80 Ramps - I-680 to Suisun Valley Rd</b> - Braid the EB ramps on I-80 from the I-680 EB on ramp to the Suisun Valley Rd EB on-ramp. The on-ramp from Green Valley Rd would be reconstructed under I-680, joining the I-680 EB on ramp to I-80.	●			Removes future p.m. peak bottleneck, improving mobility for freight.
304	Solano	<b>Complete I-80/I-680/SR 12 Interchange Improvements</b> - Complete improvements to the I-80/I-680/SR 12 Interchange and be complementary to other projects to braid ramps, add auxiliary lanes, add HOV lanes, and relocate truck scales. Project would widen the mainline to a total of seven lanes in each direction with parallel collector-distributor roads.	●			Removes existing bottleneck and substandard weave section at location with heavy-truck volumes.
47	Alameda	<b>Clement Ave Extension Between Tilden Way to Grand Ave</b> - Signalization improvements, right-of-way acquisition, and new construction, as well as resurfacing of a segment between Broadway and Grand.	●			Improve access between the island and the nearby industrial activity, matching route use with traffic operations and road characteristics.

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279	San Mateo	<b>U.S. 101/Produce Ave Interchange Project</b> - Construct a new interchange to replace the Produce Ave on-/off-ramps from Highway 101. The South Airport Blvd hook ramps to U.S. 101 at Wondercolor Lane would also be incorporated in the project.	●		●	Improves deficient interchange near SFO air cargo access road.
284	San Mateo	<b>Route 92 Slow Vehicle Lanes - Route 280 to Route 35 (South)</b> - Add an uphill climbing lane from Highway 280 to Route 35( South).	●			Separates trucks from other vehicles, while ascending a significant grade in a heavily-used truck corridor.
140	Santa Clara	<b>US 101 Widening from Cochrane Rd to Monterey Highway (includes 2 new interchanges)</b> - Widen U.S. 101 between Cochrane Rd to Monterey Highway from six to eight lanes and construct two new interchanges at Tennant and Buena Vista.	●			Improves access to high-truck volume highway location.
138	Santa Clara	<b>U.S. 101 Widening from Monterey Highway to Route 25</b> - Widen U.S. 101 between Monterey Highway to Route 25 from four lanes to six lanes.	●			Improves access to high-truck volume highway location.
312	Solano	<b>I-505 Weave Correction Project</b> - Realign the southbound connector from I-505 to westbound I-80, install an auxiliary lane between the southbound I-505 on ramp and the East Monte Vista off-ramp, and close the short gap in the fourth westbound lane of I-80 just east of I-505.		●		Improves deficient weave section in location with heavy-truck volumes.
313	Solano	<b>Braid I-80 EB Ramps from SR 12 West to Green Valley Road</b> - Construction of SR 12 West eastbound on-ramp over Green Valley Rd EB off-ramp. New ramp from SR 12 W to Green Valley Rd would also be constructed.	●			Removes future p.m. peak bottleneck improving mobility for freight.