GOODS MOVEMENT ACTION PLAN

Prepared by

Business, Transportation and Housing Agency
and
California Environmental Protection Agency

January 2007

PREFACE

Much work has been done at local and regional levels to address important goods movement issues. Notable long-term efforts include work conducted by the Southern California Association of Governments[1] and the Metropolitan Transportation Commission.[2] As the State develops its goods movement initiatives, the integrity of local and regional processes must be maintained while adding elements that benefit from a statewide approach.

Beginning in June 2004, the Schwarzenegger Administration began a concerted effort to assemble goods movement stakeholders to learn about the challenges and opportunities facing the future of goods movement within the State. The input generated by these meetings resulted in the formation of the Goods Movement Cabinet Work Group in December 2004, co-chaired by Secretary Sunne Wright McPeak of the Business, Transportation and Housing Agency (BTH) and Secretary Alan Lloyd of the California Environmental Protection Agency (Cal/EPA). Their efforts led to the publication of the Administration Goods Movement Policy, "Goods Movement in California," in January 2005.

Secretaries McPeak and Lloyd then convened a series of "listening sessions" in Los Angeles on January 27, 2005 and March 24, 2005 and in Oakland on February 11, 2005, to hear from the full range of stakeholders engaged or impacted by goods movement activities. Collectively, these sessions attracted 325 participants who offered specific ideas and recommendations to resolve issues associated with the growth of the goods movement industry and the mitigation of its impacts.

The development of the Goods Movement Action Plan has been a two-phase process. The "Phase I: Foundations" report, released on September 2, 2005, characterizes the "why" and the "what" of the State's involvement in goods movement in the following four segments: (1) the goods movement industry and its growth potential; (2) the four "port-to-border" transportation corridors that constitute the State's goods movement backbone and the associated inventory of infrastructure projects that are being planned or that are underway; (3) the environmental and community impacts—as well as a preliminary description of mitigation approaches and issues; and (4) key aspects of public safety and security issues.

The Phase I report includes a compiled inventory of existing and proposed goods movement infrastructure projects. The listing includes previously identified projects in various Regional Transportation Plans (RTPs) and Regional Transportation Improvement Programs (RTIPs) prepared by Metropolitan Planning Organizations (MPOs), Regional Transportation Planning Agencies (RTPAs), and County Transportation Commissions (CTCs). In addition, the listings include a wide range of outlined projects underway or under consideration by the ports, railroads, and other third parties. Prior to this compilation, no comprehensive statewide inventory has been available.

[1] Southern California Association of Governments, Southern California Strategy for Goods Movement: A Plan for Action, February 2005.
[2] Metropolitan Transportation Commission, Regional Goods Movement Study for the San Francisco Bay Area, December 2004.

This Phase II Goods Movement Action Plan is a statewide action plan for goods movement capacity expansion, goods movement-related public health and environmental impact mitigation and community impact mitigation, and goods movement-related security and public safety enhancements. It presents the "how," "when," and "who" required to integrate these efforts. Specifically, it presents a framework for decision making regarding candidate actions and potential "solution sets" to achieve simultaneous and continuous improvement for each of the subject areas.

The Phase II effort to develop this Plan was a stakeholder-based process with input from the public in an open and transparent public setting. In October 2005, BTH and Cal/EPA assembled an Integrating Work Group comprised of regulators and industry, community, and environmental leaders to provide input to the Cabinet Work Group regarding a framework for decision making regarding candidate actions.

The following six subject-specific work groups supported the Integrating Work Group:

- Infrastructure Work Group
- Public Health and Environmental Impact Mitigation Work Group
- Community Impact Mitigation and Workforce Development Work Group
- Homeland Security and Public Safety Work Group
- Innovative Finance and Alternative Funding Work Group
- Technology Work Group

Each of the supporting work groups discussed the technical and public policy issues within their domain. The Integrating Work Group resolved conflicts among the supporting groups to the extent possible and provided critical input to assist BTH and Cal/EPA in producing a series of comprehensive, consistent, and practical recommendations for action.

In addition to the Work Group meetings, BTH, Cal/EPA and ARB held six community meetings in Phase II for the development of this Plan. The locations and dates for these evening community meetings were:

- Wilmington – February 6, 2006
- Commerce – February 22, 2006
- Oakland – February 27, 2006
- Fresno – March 15, 2006
- Barrio Logan (San Diego) – July 11, 2006
- Riverside – July 13, 2006

Based in part on the air pollution findings in the "Phase I: Foundations" report, the Air Resources Board (ARB) staff began development of the Emission reduction Plan for Ports and Goods Movement in California in the fall of 2005. The ARB Board approved the Emission Reduction Plan in April of 2006, and the Emission Reduction Plan is a key element of this Goods Movement Action Plan.

ACKNOWLEDGMENTS

BTH Secretary Sunne Wright McPeak and Cal/EPA Secretary Linda Adams[3] led the Cabinet Work Group responsible for the preparation of the Goods Movement Action Plan.

BTH Undersecretary Barry Sedlik, Cal/EPA Assistant Secretary for Policy Cindy Tuck and ARB Executive Officer Catherine Witherspoon provided overall project management for the Phase II effort. The Action Plan has been supported by staff from BTH, Cal/EPA, and other state offices as summarized below.

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Contributors from Cal/EPA include: Dan Skopec, Andrea Lewis, Patty Zwarts and Jeanine Townsend. Contributors from ARB staff include Mike Scheible, Lynn Terry, Linda Murchison, Cynthia Marvin, Kurt Karperos, Sylvia Oey and Kellie Williams. Contributors from State Water Resources Control Board staff include: Executive Director Celeste Cantu and Tom Howard. Contributors from the Department of Toxic Substances Control include Director Maureen Gorsen, Dorothy Rice and Rick Brausch. Contributors from the Department of Pesticide Regulation include: Director Mary-Ann Warmerdam and Paul Gosselin.

Other contributors include: Director Matthew Bettenhausen, Jessica Cummings, Patrick Koeneker and Gary Winuk from the Office of Homeland Security; John Barna from the California Transportation Commission; Eric Swedlund and David Pagan from the Governor's Washington, D.C. office; and Jeffrey Williamson from the Center for International Trade Development.

[3] Former Cal/EPA Secretary Alan Lloyd led the Cal/EPA effort of the Cabinet Work Group prior to his retirement in February 2006.

California Environmental Protection Agency
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Business, Transportation & Housing Agency
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January 27, 2005

GOODS MOVEMENT IN CALIFORNIA

Improving the movement of goods in California is among the highest priorities for Governor Schwarzenegger. The State's economy and quality of life depend upon the efficient, safe delivery of goods to and from our ports and borders. At the same time, the environmental impacts from goods movement activities must be reduced to ensure protection of public health.

The goods movement and logistics industry is an increasingly important sector of good jobs for Californians. It is vital to grow the industry by improving the essential infrastructure needed to move goods from California's ports throughout California and to the rest of the country with a focus on the entire "coast to border" system of facilities, including seaports, airports, railways, dedicated truck lanes, logistics centers, and border crossings. This system of facilities is critical to the national goods movement network and must be the focus of a partnership with the federal government. Improving the goods movement infrastructure also is pivotal to relieving congestion on freeways and increasing mobility for everyone in California. Further, it is vital that local, state, and federal authorities cooperate to ensure port, rail and road safety and security.

It is the policy of this Administration to improve and expand California's goods movement industry and infrastructure, in a manner which will:

- Generate jobs.
- Increase mobility and relieve traffic congestion.
- Improve air quality and protect public health.
- Enhance public and port safety.
- Improve California's quality of life.

The Schwarzenegger Administration has established a Cabinet Work Group to lead the implementation of this policy for goods movement and ports by working collaboratively with the logistics industry, local and regional governments, neighboring communities, business, labor, environmental groups and other interested stakeholders to achieve shared goals.

.GOODS MOVEMENT ACTION PLAN

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I. EXECUTIVE SUMMARY

The Goods Movement Action Plan (the Plan) is an initiative of the Schwarzenegger Administration to improve and expand California's goods movement industry and infrastructure in a manner which will:

- Generate jobs.
- Increase mobility and relieve traffic congestion.
- Improve air quality and protect public health.
- Enhance public and port safety.
- Improve California's quality of life.

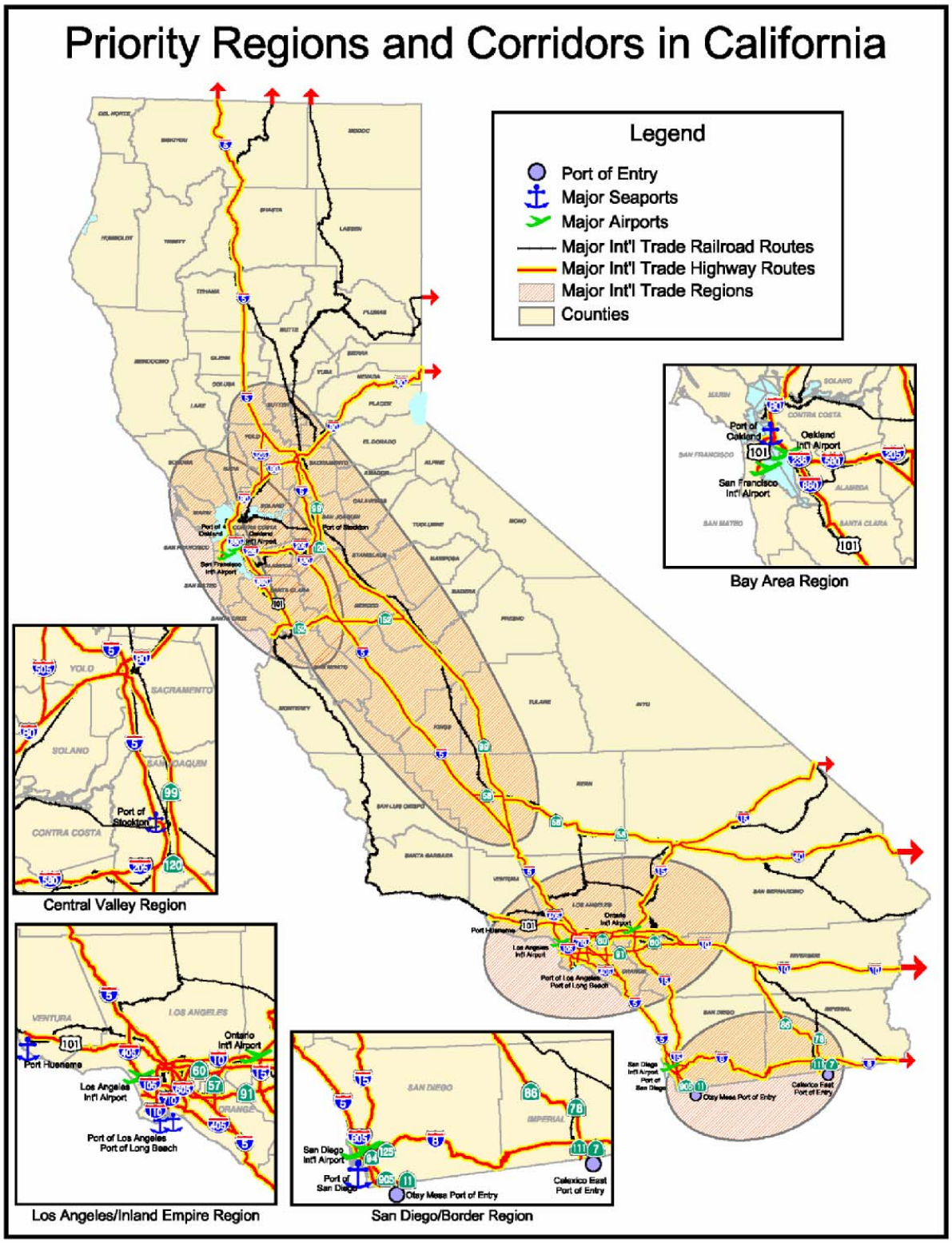
The development of the Goods Movement Action Plan has been a two-phase process. The "Phase I: Foundations" Report, released on September 2, 2005, characterizes the "why" and the "what" of the State's involvement in goods movement in the following four segments: (1) the goods movement industry and its growth potential; (2) the four "port-to-border" transportation corridors that constitute the State's goods movement backbone and the associated inventory of infrastructure needs (see Figure I-1); (3) environmental and community impacts—as well as a preliminary description of mitigation approaches and issues; and (4) key aspects of public safety and security issues.

The Phase I report includes a compiled inventory of existing and proposed goods movement infrastructure projects. The listing includes previously identified projects in various Regional Transportation Plans (RTPs) and Regional Transportation Improvement Programs (RTIPs) prepared by Metropolitan Planning Organizations (MPOs), Regional Transportation Planning Agencies (RTPAs), and County Transportation Commissions (CTCs). In addition, the listings include a wide range of outlined projects underway or under consideration by the ports, railroads, and other third parties. Prior to this compilation, no comprehensive statewide inventory has been available.

This Plan is the work product of the Phase II effort that has been underway since September 2005. It includes a set of preliminary candidate actions for operational improvements, infrastructure additions, public health and environmental impact mitigation actions, community impact mitigation and workforce development actions, and security and public safety improvement efforts. It presents the "how," "when," and "who" required to integrate these efforts. It presents a framework for decision-making regarding candidate actions and potential solution sets to achieve simultaneous and continuous improvement as discussed in this Plan.

The Phase II effort focuses on action, getting to the particulars of how to make needed improvements and address serious environmental and community concerns about goods movement operations. The staggering growth of the goods movement industry as a consequence of changing global business trends provides California with great opportunities and great challenges. If needed infrastructure investments are made, growth of the industry can be a

Figure I-1


Priority Regions and Corridors in California
Legend
Port of Entry
Major Seaports
Major Airports
Major Int'l Trade Railroad Routes
Major Int'l Trade Highway Routes
Major Int'l Trade Regions
Counties
Bay Area Region
Central Valley Region
Los Angeles/Inland Empire Region
San Diego/Border Region

source of high wage jobs to California's growing population. If infrastructure investments are stalled or not made, job growth may be more limited and aging infrastructure will likely be unable to serve the future needs of Californians. Similarly, if needed investments are made to address serious environmental and community concerns associated with goods movement, public health and quality of life can be improved. If investments are not made to address the serious environmental and community concerns associated with goods movement sources and increases in goods movement sources, already high levels of air pollution, along with the associated health effects and other environmental and community impacts, will continue to increase and harm public health and quality of life.

The complexity of the industry, the urgency of the needs for environmental and community impact mitigation, and the vulnerabilities of vital infrastructure to the threat of terrorism require that decisions be made now about California's next two to three decades. While the combinations and permutations of outcomes are almost endless, it is the Administration's responsibility to develop the best information possible and take prudent action even though uncertainties remain. Public health and the economics of goods movement are too important to the people of California to not take action.

Specifically, a statewide perspective enables:

- Assessment of projects as part of a statewide goods movement system.
- Comparison of port, rail, and highway projects in a common framework.
- Identification of critical public health and environmental mitigation and community impact mitigation actions.
- Prioritization of projects and actions to address the most important needs first.
- Concentration of effort to secure required funding in an orderly fashion.
- Evaluation of performance to determine if State, regional, and community benefits are achieved.

This Goods Movement Action Plan presents a "framework for action." Building the framework on a performance measurement platform provides a means to evaluate, select, and fund candidate projects and actions relative to desired outcomes. The framework is built on a foundation of internally consistent principles aligned with Administration policy. Consistent with defined principles, a series of evaluation criteria are established to judge the merits of prospective projects or actions. Criteria are defined for infrastructure and operational improvements, environmental impact mitigation, community impact mitigation and workforce development, and public safety and security. Performance metrics are established where appropriate to quantify and assess outputs and outcomes relative to expectations. Finally, sets of benchmarks are developed, where appropriate, to judge how performance relates to "best-in-class" for comparable projects or actions executed elsewhere. In order to give context to the preliminary candidate actions, their selection and implementation timeframe, one must keep in mind the five thematic considerations of the 22 guiding principles:

- Consider the four port-to-border corridors as one integrated system.
- Undertake simultaneous and continuous improvement in infrastructure and mitigation.

- Pursue excellence through technology, efficiency, and workforce development.
- Develop partnerships to advance goals.
- Promote trust, provide for meaningful public participation, and ensure environmental justice consistent with state law.

Table I-1 presents a summary of preliminary candidate actions and projects developed by the Business, Transportation and Housing Agency (BTH) and the California Environmental Protection Agency (Cal/EPA). The table contains a range of items that include desired practices, studies or evaluations, regulatory measures, and physical projects. This inventory identifies statewide preliminary candidate actions in four categories:

- Infrastructure Projects and Operations
- Public Health and Environmental Impact Mitigation
- Community Impact Mitigation and Workforce Development
- Homeland Security and Public Safety

The table organizes the preliminary candidate actions as noted above and applies a timeframe to designate immediate, short-term, intermediate-term, and long-term actions within each area of focus. The timeframe can be interpreted[4] in the following terms:

- Immediate (immediate implementation; generally operational improvements)
- Short-term (0-3 years)
- Intermediate-term (4-10 years)
- Long-term (10+ years)

Actions are assigned to the timeframe based on considerations of complexity and scope. By scanning vertically through the columns of the table, one can identify actions within the same timeframe and across all four categories. Conversely, moving horizontally across the table will reveal actions in the same area of goods movement over the four timeframes. In the consideration of Infrastructure and Operations and Public Health and Environmental Impact Mitigations, there are further delineations within the table that group mode-specific actions.

Collectively, the Action Plan identifies approximately 200 actions and projects recommended for further investigation, review or implementation. In aggregate, preliminary findings indicate that the collective capital costs total approximately $15 billion. The total cost for goods movement-related emission reduction strategies, as compiled by the California Air Resources Board (ARB) in the Emission Reduction Plan for Ports and Goods Movement in California (April 2006), is estimated to be between $6 billion and $10 billion.

With the passage of the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, $3.1 billion will be available to help address the wide range of infrastructure, air quality, and homeland security aspects of California's goods movement system. Those funds include $2 billion for infrastructure, $1 billion for emission reduction projects, and $100 million

[4] The preliminary candidate infrastructure projects in Appendix C are delineated by a slightly different time frame as follows: Short 1-5 years; Intermediate 6-10 years; and Long 11-20 years.

to enhance homeland security. Chapter VII of the Plan includes BTH's and Cal/EPA's recommendations to the California Transportation Commission (CTC) regarding allocation of the infrastructure funding and recommendations to ARB regarding allocation of the air quality funding. The newly formed California Maritime Transportation Security Council will recommend allocation of the available public safety funds.

To aid the California Transportation Commission with prospective areas to direct transportation infrastructure resources, the Action Plan presents a series of "solution sets" of high priority projects that can produce corridor-wide improvements and lay a foundation for future project and action implementation. Table I-2 presents those solution sets. Chapter V includes a detailed discussion and important caveats regarding the solution sets.

Finally, the Plan is based on the fundamental principle that infrastructure project actions, public health and environmental mitigation actions, and community impact mitigation actions must be approached on a simultaneous and continuous basis. The Plan describes at Chapter VI how this principle will be implemented and verified.

Table I-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Infrastructure and Operations	<u>Operational Improvements</u> **Ships** ➢ Spread out vessel sailings and arrivals in the trans-Pacific trade. ➢ Evaluate short- sea shipping – including environmental impacts. ➢ Increase "destination loading" on ships from the Far East. ➢ Finalize ARB ship auxiliary engine rule (OAL review). **Ports** ➢ Operate PierPass port extended gate hours program. ➢ Implement PierPass drayage truck fleet emission reduction program. ➢ Expand labor force at the ports. ➢ Improve labor work rule flexibility to enable increased daily truck turns. ➢ Implement virtual container yards. ➢ Implement incentives to limit container dwell time. ➢ Finalize ARB intermodal cargo equipment rule (OAL). **Rail** ➢ Evaluate shuttle train pilot project performance. ➢ Utilize more rail for long haul. ➢ Finalize ARB intermodal cargo equipment rule (OAL). **Trucks** ➢ Develop regional or national chassis pools. ➢ Implement port-wide terminal appointment systems for truckers. **Other** ➢ Employ better trade and transportation forecasting. ➢ Improve communications of fluctuating demand forecasts for labor and equipment among carriers, railroads, and terminal operators. ➢ Develop comprehensive goods movement data collection methodologies, modeling, and data evaluation. ➢ Enact public-private partnership legislation. ➢ Enact design-build and design sequencing legislation.	<u>Infrastructure Projects</u> ➢ State Route 47, Alameda Corridor Expressway (includes Schuyler Heim Bridge replacement). ➢ I-710 Early Action Project: Port Terminus Improvements. ➢ Port of Long Beach Gerald Desmond Bridge Replacement. ➢ Alameda Corridor East Grade Separations.* ➢ BNSF/UP, Los Angeles Basin Rail Capacity Improvements.* ➢ BNSF/UP Colton Crossing Rail Grade Separation.* ➢ Port of Oakland 7th Street/Union Pacific Grade Separation Reconstruction. ➢ Port of Oakland Outer Harbor Intermodal Terminal. ➢ Union Pacific Railroad Martinez Subdivision, Oakland to Martinez, Capacity Improvement Project. ➢ I-880 23rd and 29th Avenue Interchanges, Operational improvements. ➢ Altamont Pass Rail Corridor/Central Valley Rail Freight Shuttle Demonstration Project. ➢ State Route 905 Six-Lane Freeway (Mexico border/Otay Mesa port of entry to Interstate 805). ➢ Port of San Diego National City Marine Terminal Operational Improvements. ➢ BNSF Tehachapi Pass Double Track, Tunnels Modification. ➢ UP Central Corridor Double Track, Tunnels Modification.	<u>Infrastructure Projects</u> ➢ Alameda Corridor East Grade Separations.* ➢ BNSF "Southern California International Gateway" Near Dock Intermodal Facility. ➢ Union Pacific Near Dock Intermodal Container Transfer Facility. ➢ BNSF/UP Los Angeles Basin Rail Capacity Improvements.* ➢ Interstate 5 Truck Lanes, SR 14 to Calgrove Blvd. ➢ BNSF/UP Colton Crossing Rail Grade Separation. ➢ I-80 Cordelia Truck Scales. ➢ State Route 4 Extension to the Port of Stockton. ➢ I-580 Westbound Truck Climbing Lanes. ➢ I-580 Eastbound Truck Climbing Lanes. ➢ Otay Mesa East Border Crossing (new). ➢ State Route 11,State Route 905 to Otay Mesa East Border Crossing.	<u>Infrastructure Projects</u> ➢ Alameda Corridor East Grade Separations* ➢ BNSF/UP Los Angeles Basin Rail Capacity Improvements.*

* These infrastructure projects appear in more than one time frame due to the complexity and/or scope of the specific project(s).

Table I-1 PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS					
		Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Health and Environmental Mitigation – Air Quality	Ships	➢ Support for ratification of MARPOL Annex 6 for international shipping. ➢ Implement vessel speed reduction MOU in Southern California. ➢ Finalize ARB ship auxiliary engine rule (i.e., Office of Administrative Law (OAL) review).	➢ Utilize lower sulfur fuel (0.5% by 2007) for marine auxiliary engines. ➢ Dedicate cleanest vessels to California service (ongoing). ➢ Increase use of cleaner fuels in ships through voluntary or regulatory mechanisms (ongoing). ➢ Increase use of shore power or alternatives for ships through voluntary or regulatory mechanisms (ongoing). ➢ Expand vessel speed reduction program.	➢ Utilize lower sulfur fuel (0.1% by 2010) for ship auxiliary engines. ➢ Obtain Sulfur Emission Control Area (SECA). designation or alternative. ➢ Retrofit existing main engines on ships during major maintenance (ongoing). ➢ Install emission controls on ship main/auxiliary engines of frequent flyers (ongoing). ➢ Continue ongoing strategies.	➢ Continue ongoing strategies.
	Locomotives	➢ Utilize CA low sulfur diesel for captive instate locomotives. ➢ Implement 1998 Railroad MOU for South Coast Air Basin. ➢ Implement 2005 Statewide MOU for Rail Yard Risk Reduction. ➢ Conduct ARB training on locomotive idling restrictions.	➢ Upgrade engines in switcher locomotives by 2010. ➢ Retrofit existing locomotive engines with diesel PM controls. ➢ Use cleaner fuels in locomotives, particularly for captive fleets and/or new facilities.	➢ Implement Tier 3 US standards for line haul locomotives (new engine and rebuild standards). ➢ Implement US low sulfur fuel for interstate locomotives. ➢ Concentrate Tier 3 locomotives in California (ongoing).	➢ Continue ongoing strategies.
	Trucks	➢ Utilize CA low sulfur diesel for trucks. ➢ Conduct smoke inspections for trucks in communities. ➢ Enforce 5 minute idling limit for trucks. ➢ Accelerate software upgrade for trucks. ➢ Implement incentives for cleaner trucks.	➢ Adopt and implement ARB rule to modernize (replace and/or retrofit) private truck fleets (ongoing). ➢ Modernize (replace and/or retrofit) port trucks (ongoing). ➢ Implement CA/US 2007 truck emission standards. ➢ Adopt and implement ARB rule to require international trucks to meet US emission standards. ➢ Enforce CA rule for transport refrigeration units on trucks, trains, ships. ➢ Enhance enforcement of truck idling limits.	➢ Restrict entry of trucks new to port service unless equipped with diesel PM controls. ➢ Continue ongoing strategies.	➢ Continue ongoing strategies.

Table I-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

		Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Health and Environmental Mitigation – Air Quality, Continued	Cargo Handling Equipment	➢ Utilize CA low sulfur diesel for equipment. ➢ Finalize ARB intermodal cargo equipment rule (i.e., OAL review). ➢ Implement State incentives for cleaner fuels at Ports of Los Angeles and Long Beach.	➢ Implement ARB rule for cleaner cargo handling equipment through replacement, retrofit, or alternative fuels (ongoing). ➢ Adopt and implement ARB fork lift rule for gas-fired equipment (ongoing). ➢ Require green equipment for goods movement related construction and maintenance.	➢ Implement CA/US Tier 4 equipment emission standards. ➢ Upgrade cargo handling equipment to 85% diesel PM control or better. ➢ Continue ongoing strategies.	➢ Increase penetration of zero emission or near zero emission cargo handling equipment. ➢ Continue ongoing strategies.
	Commercial Harbor Craft	➢ Implement incentives for cleaner harbor craft.	➢ Adopt tighter USEPA or ARB emission standards for harbor craft. ➢ Utilize CA low sulfur diesel for harbor craft. ➢ Clean up harbor craft through replacement, retrofit, or alternative fuels (ongoing). ➢ Use shore power for harbor craft at dock.	➢ Implement new USEPA or ARB engine standards for harbor craft. ➢ Implement incentives to accelerate introduction of new harbor craft engines. ➢ Continue ongoing strategies.	➢ Continue ongoing strategies.

Table I-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Health and Environmental Mitigation – Water Quality	➢ Apply thoroughly and enforce existing water quality requirements (e.g., permits, certifications, etc.) on projects, and treat complaints, tips and violations (noncompliance with requirements) as a high priority – particularly at port operations areas, truck traffic idling areas, and upland disposal areas of any dredged materials. ➢ Identify waste load allocations (pollutant level targets, in terms of mass discharge allowed) for port-area water bodies currently listed as impaired [pursuant to Clean Water Act section 303(d)]. ➢ Review current ballast water exchange practices and identify opportunities to further mitigate exotic species introduction. ➢ Initiate studies to better understand relationship between airborne emissions in port areas and water quality and beneficial use impacts. ➢ Initiate studies to identify community impacts from project-related activities with regards to water quality and beneficial use of the waters (with special attention to potential environmental justice impacts and subsistence consumption and recreational uses). ➢ Identify sources of marine debris discharges in port areas and begin to eliminate them. ➢ Implement better land planning practices that employ the key principles of Low Impact Development (LID). For example: use site hydrology as the organizing principle for all others. o Match the initial abstraction and mimic natural water balance. o Employ a uniform, strategic distribution of small-scale controls. o Decentralize controls and disconnect impervious surfaces. o Minimize land disturbance and connected, impervious cover. o Incorporate natural site elements into design.	➢ Establish redundant systems to eliminate or reduce discharges of marine debris and other pollutants causing impairments. ➢ Establish performance measures to measure effectiveness of mitigation activities and overall mission to protect enhance and restore beneficial uses of waters in project areas. ➢ Continue to thoroughly apply and enforce existing water quality requirements (e.g., permits, certifications, etc.) on projects, and treat complaints, tips and violations (noncompliance with requirements) as a high priority – particularly at port operations areas, truck traffic idling areas, and upland disposal areas of any dredged materials. ➢ Apply waste load allocations (pollutant level targets, in terms of mass discharge allowed) for port-area water bodies approved and in force. ➢ Continue to identify waste load allocations (pollutant level targets, in terms of mass discharge allowed) for port-area water bodies currently listed as impaired [pursuant to Clean Water Act section 303(d)]. ➢ Implement better ballast water exchange practices and identify opportunities to reduce and further mitigate exotic species introduction. ➢ Implement recommendations from studies to reduce water quality and beneficial use impacts from airborne emissions in port areas. ➢ Implement recommendations from studies to enhance and restore water quality and beneficial use of the waters (with special attention to potential environmental justice impacts and subsistence consumption and recreational uses) in communities surrounding projects. ➢ Continue to implement better land planning practices that employ the key principles of Low Impact Development (LID).	➢ Monitor performance of systems employed and practices implemented in previous terms and revise plans or practices as needed. ➢ Ongoing implementation of short-term actions.	➢ Ongoing implementation of intermediate actions.

Table I-1 PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS				
	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Health and Environmental Mitigation – Hazardous Waste Management	➢ Develop a statewide Hazardous Waste and Contaminated Media Management Plan for goods movement-related infrastructure projects to ensure the integrated, safe management of hazardous wastes and substances encountered during project design and construction. ➢ Account for the costs of any required management of contaminated soils, mitigation of other hazardous substances contamination, and oversight of compliance with related regulatory requirements in the planning and execution of infrastructure projects. ➢ Design infrastructure projects with an effort to minimize exposure to hazardous substances and to manage hazardous substances to minimize public health and environmental impacts of any removal, transportation, treatment, and onsite management. ➢ Ensure that hazardous substances mitigation approaches (such as on-site management, deed restrictions, etc.) will remain protective of public health and the environment for the life of the infrastructure project and that operations and maintenance plans that provide for ongoing monitoring and inspection of any remedial systems or site controls are in place where appropriate.	➢ Develop project specific Hazardous Waste and Contaminated Media Management Plans to ensure the integrated, safe management of hazardous wastes and substances encountered during project design and construction.	➢ Ongoing implementation of immediate and short-term actions.	➢ Ongoing implementation of immediate and short-term actions.

Table I-1 PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS				
	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Community Impact Mitigation and Workforce Development	Note: The actions listed in the Public Health and Environmental Mitigation section will provide significant health benefits to communities adjacent to ports, rail yards, intermodal facilities, and highways. Additional general actions include: Strategies ➢ Enforce anti-idling rules. ➢ Reroute trucks. ➢ Conduct mitigation and pollution prevention. ➢ Develop community benefit agreements when desired by the community. ➢ Conduct targeted community assessments including monitoring as appropriate. ➢ Track emission reductions and estimated cancer risk reduction in communities. ➢ Preserve existing parks, open space, and natural areas. ➢ Coordinate with local city redevelopment departments to identify priority enhancement areas in adjacent communities. ➢ Develop and implement community enhancement projects. ➢ Emphasize landscaping and aesthetic improvements using local native plants. ➢ Increase enforcement of traffic and vehicle safety laws and regulations. ➢ Increase public and trucker education on safety and neighborhood issues. Public Participation ➢ Expand public outreach. ➢ Consult community members regarding infrastructure plans throughout the planning process. ➢ Establish Community Advisory Committee for the EIR /EIS stage of an infrastructure project (for projects that have not already gone through the environmental review process).	➢ Ongoing implementation of immediate actions. ➢ Use green equipment for construction of infrastructure projects (as available). ➢ Establish construction staging areas in locations to minimize impact on local circulation. ➢ Establish a community forum to address community concerns during construction. ➢ When considering operational changes to extend hours (including during construction), evaluate noise and light impacts on adjacent communities. ➢ Mitigate noise impacts in adjacent communities. ➢ Mitigate light impacts in adjacent communities. .	➢ Ongoing implementation of immediate and short-term actions.	➢ Ongoing implementation of immediate, short-term, intermediate-term and long-term actions.

Table I-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Community Impact Mitigation and Workforce Development, Continued	Public Participation, Continued ➢ Hold public meetings when members of the affected community can attend (e.g., in the evening). ➢ Include language translation where appropriate. ➢ Draw on knowledge and experience from the community. Land Use Planning ➢ Integrate port and city planning/promote use of buffer zones between ports and surrounding communities. Workforce Development ➢ Partner with the California Community Colleges Economic and Workforce Preparation Division, the California State University System and other institutions of higher learning, K-12, and employers to respond to the demand for qualified workers and continuous workforce improvement.	➢ Provide goods movement job training within affected communities. ➢ Develop industry driven and industry recognized certificate programs (and curriculum) in the areas of transportation, logistics support, warehousing and storage, supply chain management and safety and security. ➢ Provide logistics (goods movement) training to incumbent workers to enhance productivity and create higher skilled higher wage jobs in this sector. ➢ Placement of workers into logistics industry by creating awareness of job opportunities and preparing job seekers with employable traits as required by industry.	➢ Provide goods movement job training within affected communities. ➢ Continuously develop and offer for credit and not-for-credit logistics and goods movement curriculum. ➢ Replicate model across California.	➢ Provide goods movement job training within affected communities. ➢ Create an educational continuum by articulating curriculum from K-12 through graduate school to provide incumbent workers, employers, and job seekers with continuous educational opportunities.

Table I-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Safety and Security	Operational Improvements, Evaluations and Studies ➢ Align CHP Foreign Export and Recovery (FEAR) efforts with Federal Homeland Security. ➢ Establish a multi-jurisdictional Port Security Task Force ➢ Evaluate cross-sectoral vulnerability of ports (power, water, etc). ➢ Evaluate all truck and rail routes out of port districts and air basins to determine long term velocity, security, and environmental opportunities. ➢ Develop a Federal, State, and Local funding strategy. ➢ Evaluate the "Agile Port" concept for public safety/homeland security advantages. ➢ Use the NAFTA model to understand the public safety and security issues. ➢ Evaluate lane departure technology to identify driver fatigue and safety scoring of operators. ➢ Continue support and implementation of safety improvement programs. ➢ Increase enforcement of traffic and vehicle safety laws and regulations. ➢ Increase public and trucker education on safety and neighborhood issues. ➢ Urge US Coast Guard District Eleven Command to adopt the Automated Secure Vessel Tracking System (ASVTS) developed by the Maritime Information Services of North America (MISNA). ➢ Evaluate new freight transportation technologies (maglev, SAFE shuttle, etc.) for Homeland Security and public safety applications. ➢ Evaluate *Green Freight Corridor* road and rail infrastructure with integrated sensor network for Homeland Security and public safety applications.	➢ Construct commercial vehicle enforcement facilities around the LA/LB and Oakland ports to enhance highway safety and security. ➢ Establish a pilot test program using hazardous materials movement of containers and a short haul rail system that "flushes out" the containers in the ports and rail yards. ➢ Develop a pilot project for creating a physical communication grid in the corridor. ➢ Use intelligence and automated info to identify and target high-risk containers. ➢ Pre-screen high-risk containers at point of departure. ➢ Use new detection technology to quickly prescreen. ➢ Develop joint inspection stations in the port districts and at the border crossing. ➢ Develop community web portal to provide real or near real time information on goods movement and freight mobility conditions across road and rail network within the region. ➢ Clear U.S. Customs at inland destinations.	➢ Retrofit freight vehicles with probes and smart sensors to measure speed, weather, pollution, lane departure, cargo location, customs data, container RFID information, and vehicle/frame condition inspection dates. ➢ Use smarter, tamper-evident containers with RFID e-seals. ➢ Develop a container loading and unloading program (similar to CTPAT) that addresses homeland security issues like peaking for local California businesses.	➢ Develop a Green Freight Corridor (similar to Customs Green Lane) program and system. ➢ Install sensors and environmental monitoring equipment along corridor to communicate between operators, vehicles, containers and the command center. ➢ Establish three integrating centers for all data and system managements at the ports, Mexican border, and the Inland Empire using the Metrolink model. ➢ Provide data feeds from corridor system to County Emergency center, the Command and Control Center at Camp Pendleton, the CHP command centers, and NORTHCOM.

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[6]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
Los Angeles/Inland Empire Corridor					
Truck Emission Reduction and Congestion Mitigation[7]					
• PierPass Extended Gate Hours Program					Provides for extended gate hours, reduced congestion and emissions
• PierPass Emission Reduction Program					Reduces emissions
• Virtual Container Yard					Reduces unnecessary truck trips to and from ports
• Common Chassis Pool					Enables more efficient use of equipment and reduces unnecessary truck trips

[6] The project mitigation cost and project total cost columns are included to illustrate that the total cost of the project includes the cost of required mitigation, and that total cost should be funded as the cost of the project.
[7] These programs are intended to be industry-funded.

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[6]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
• Work rule flexibility[8]					Provides means to improve efficiencies and enable truck owner-operators to increase number of daily turns
Truck Port Access Improvements					
• State Route 47, Alameda Corridor Expressway (including Schuyler Heim Bridge replacement)	111,000	557,000			Improves access to Terminal Island terminals and near-dock facilities
• I-710 Early Action Project: Port Terminus Improvements	60,000	300,000			Improves safety and access by upgrading State Route 1 (Pacific Coast Highway) and Anaheim Street interchanges and expands green space
• Port of Long Beach, Gerald Desmond Bridge Replacement	160,000	800,000			Improves access to Terminal Island; removes bottleneck to both ship and truck movements

[8] This is currently under International Longshore and Warehouse Union (ILWU) consideration.

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[6]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
Rail Mode Increase					
• Port of Los Angeles/Burlington Northern Santa Fe, "Southern California International Gateway" Near Dock Facility (See Chapter V Text.)	40,000	200,000			Reduces truck trips on Interstate 710; relieves rail terminal capacity constraint
• Ports of Los Angeles and Long Beach/Union Pacific, Near Dock Intermodal Container Transfer Facility Completion (See Chapter V Text.)	20,000	100,000			Reduces truck trips on Interstate 710; relieves rail terminal capacity constraint
• Alameda Corridor East Grade Separations • Los Angeles County • Orange County • Riverside County • San Bernardino County	313,000 112,000 158,000 ~~108,000~~ 691,000	1,565,000 562,000 788,000 ~~541,000~~ ~~3,456,000~~			Addresses community division safety issues; reduces vehicle emissions

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[6]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
System Throughput/Velocity Improvements					
• Burlington Northern Santa Fe/Union Pacific, Los Angeles Basin Rail Capacity Improvements (main line capacity, shuttle train demonstration project improvements) • Los Angeles County • Orange County • Riverside County • San Bernardino County	67,000 29,000 114,000 212,000 422,000	333,000 145,000 572,000 1,061,000			Addresses current and projected 2010 system capacity constraints; enhances Metrolink/ Amtrak services; facilitates rail freight shuttle service demonstration
• Burlington Northern Santa Fe/Union Pacific, Colton Crossing Grade Separation	56,000	2,111,000 280,000			Removes major railroad bottleneck; improves safety, reliability; enhances Metrolink/Amtrak services
• State Route 14 to Calgrove Blvd., Interstate 5 Truck Lanes	12,000	60,000			Removes bottleneck; improves both truck and passenger vehicle velocity

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[6]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
Bay Area Corridor					
Port Access Improvements					
• Port of Oakland, 7th Street/Union Pacific Grade Separation Reconstruction	50,000	250,000			Removes access bottleneck; improves throughput, reliability and safety
Rail Mode Increase					
• Port of Oakland, Outer Harbor Intermodal Terminal	65,000	325,000			Enhances capacity; improves performance of port intermodal operations, reduces truck trips
System Throughput/Velocity Improvements					
• Union Pacific Railroad Martinez Subdivision, Oakland to Martinez, Capacity Improvement Project	16,000	78,000			Improves access; relieves Capital Corridor, San Joaquin and rail freight train operational conflicts
• Interstate 880, 23rd and 29th Avenue Interchanges, Operational Improvements	18,000	91,000			Improves reliability and safety; enhances access to seaport and airport

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[6]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
• Cordelia Truck Scales	22,000	110,000			Improves safety; would be coordinated with I-80/I-680/SR 12 interchange improvement projects.
Central Valley Corridor					
Port Access Improvements					
• State Route 4 (Crosstown Freeway) Extension to Port of Stockton	20,000	100,000			Improves throughput and access
Bay Area/Central Valley Access Improvements					
• Altamont Pass Rail Corridor/Central Valley Rail Freight Shuttle Demonstration Project	5,000	27,000			Addresses track alignment issues; facilitates shuttle and Altamont Commuter Express services
• I-580 Westbound Trucking Climbing Lanes	20,000				Improves velocity and safety
• I-580 Eastbound Truck Climbing Lanes	20,000	100,000			Improves velocity and safety
		100,000			

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[6]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
San Diego/Border Corridor					
International Border Access/System Velocity					
• State Route 905 Six-Lane Freeway	59,000	494,000			Improves access to border; facilitates international trade (50% of unfunded balance)
• Otay Mesa East Border Crossing (new)	41,000	260,000			Improves access to border; facilitates international trade (partial funding)
• State Route 11, State Route 905 to Otay Mesa East Border Crossing	47,000	234,000			Provides access to new border crossing
Port Access Improvements					
• Port of San Diego-National City Marine Terminal Operational Improvements	11,000	57,000			Improves access

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[6]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
State Gateways and Central Coast					
System Throughput/Velocity Improvements					
• Burlington Northern Santa Fe, Tehachapi Pass Double-Track, Tunnel Modification	16,000	82,000			Relieves bottleneck; provides for improved rail service to Port of Oakland, Central Valley
• Union Pacific, "Central Corridor" Double Track, Tunnels Modification	18,000	90,000			Improves east-west operations and reliability; provides opportunity for extension of Capitol Corridor services to Reno.
TOTAL	***$2,000,000***	***$10,262,000***			

II. INTRODUCTION

A. Overview

The Goods Movement Action Plan ("Action Plan") is an initiative of the Schwarzenegger Administration to address the complex issues surrounding goods movement in California. The Action Plan, developed in two phases, describes a comprehensive and actionable program spanning the next decade to address operational concerns, current and future infrastructure needs, environmental, public health and community impact mitigation, public safety and security issues, and workforce development opportunities regarding goods movement on a statewide basis. Implementation of the plan will help California have a "green," efficient, and safe goods movement system that supports jobs and economic prosperity while improving the environment and quality of life for communities adjacent to California's goods movement corridors.

Phase I of the Plan focused on the "why" and the "what" of goods movement in California.[9] The "Phase I: Foundations" report detailed changing global trends and the continuing growth of California's population as key drivers in the double-digit growth of international trade expected through California's ports.

The Phase I report includes an inventory of over $47 billion of prospective infrastructure projects for improving and expanding California's four principle goods movement corridors. (The map in Figure II-1 shows the four corridors.) The inventory of infrastructure improvement projects is a compilation of previously identified projects that are evaluated through California's transportation project planning and programming process (see Appendix B). These projects are contained in various Regional Transportation Plans (RTPs) and Regional Transportation Improvement Programs (RTIPs) prepared by Metropolitan Planning Organizations (MPOs), Regional Transportation Planning Agencies (RTPAs), and County Transportation Commissions (CTCs). In addition, the listings include a wide range of projects underway or under consideration by the ports, railroads, and other third parties. Prior to this compilation, no comprehensive statewide inventory has been available.

The Phase I report also included preliminary information regarding goods-movement related emissions, the associated health effects and strategies to reduce those emissions. (See Chapter III for more information in this area.) The Phase I report noted that the expected growth in the goods movement industry requires a comprehensive strategy to reduce goods movement related emissions.

[9]Business, Transportation and Housing Agency and California Environmental Protection Agency, "Goods Movement Action Plan, Phase I: Foundations," September 2005.

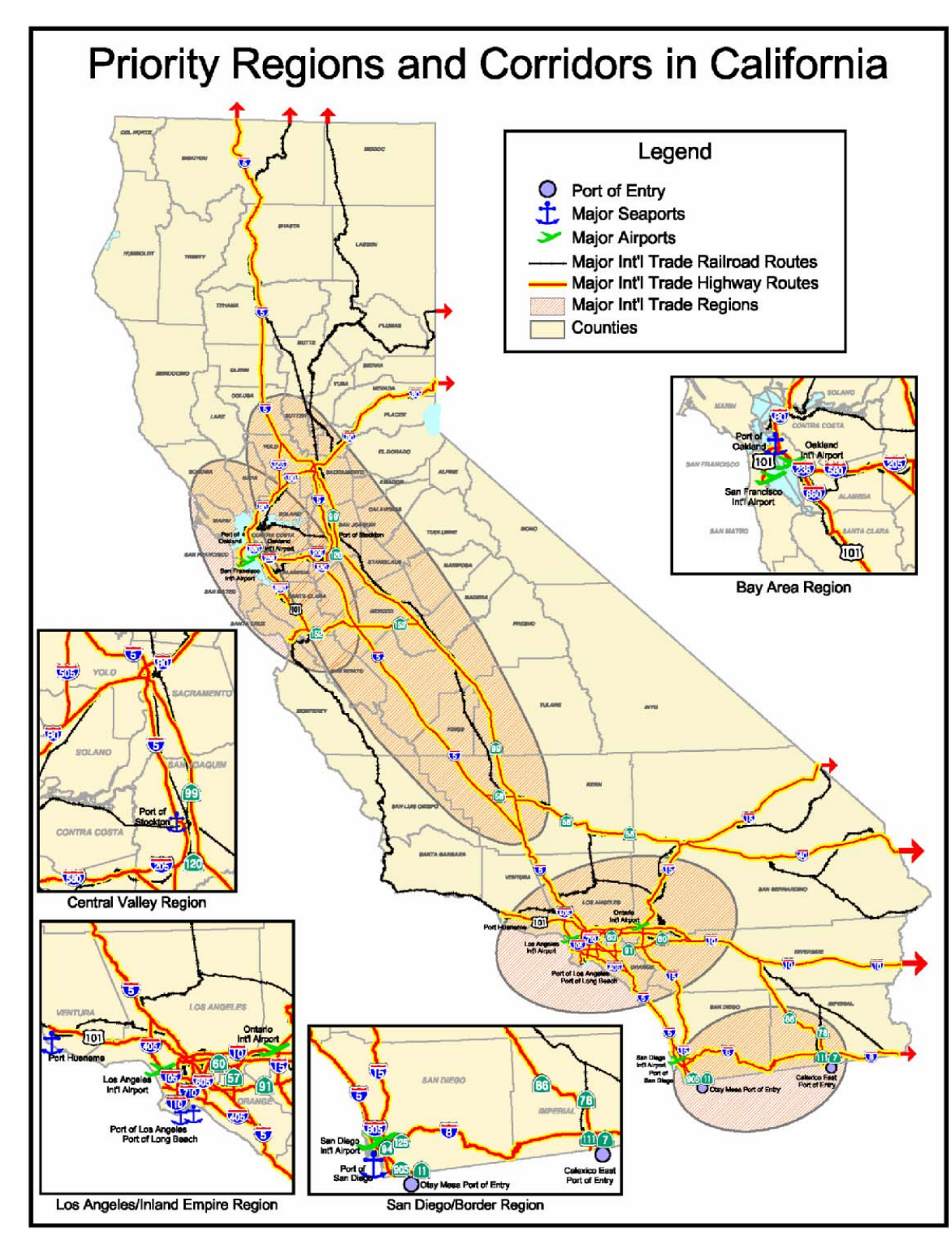

Priority Regions and Corridors in California
Legend
Port of Entry
Major Seaports
Major Airports
Major Int'l Trade Railroad Routes
Major Int'l Trade Highway Routes
Major Int'l Trade Regions
Counties
Bay Area Region
Central Valley Region
Los Angeles/Inland Empire Region
San Diego/Border Region

Figure II-1

Phase I also included a preliminary discussion of community-related issues, including opportunities for workforce development and concerns such as blight, traffic congestion, noise, and light pollution resulting from goods movement operations. Issues regarding homeland security and public safety were also compiled.

The Phase II effort has employed a stakeholder-driven process to identify the "how," "when," and "who" aspects to deal with these wide-ranging issues. Focusing on the need to achieve "simultaneous and continuous" improvements in goods movement system performance and mitigation of related environmental and community impacts, the Plan identifies prospective strategies, funding sources, and funding mechanisms to achieve needed outcomes with appropriate accountability. The Plan also details the establishment of air quality and public health baselines to ensure that needed progress is achieved. With a price tag exceeding $20 billion for both infrastructure project and emission reduction strategies over the next ten years, the Action Plan lays out a series of "solution sets" that provide a starting point for the section of infrastructure projects and activities.

The $3.1 billion of bond funds enabled through the passage of Proposition 1B by California voters in November 2006 will help make a down payment on needed goods movement-related infrastructure, emission reductions, and homeland security improvements.[10] Consistent with provisions of Proposition 1B, BTH and Cal/EPA are submitting the Action Plan to the California Transportation Commission to help guide the decision-making on the allocation of $2 billion of bond proceeds for goods movement infrastructure. BTH and Cal/EPA will also share the Plan with the California Air Resources Board (ARB) and the California Office of Homeland Security (OHS) as they consider allocation of bond proceeds totaling $1 billion for mitigation of goods movement-related air quality impacts and $100 million for homeland security improvements, respectively. Leveraging these resources with federal, local, and private funds will be key to accelerating needed outcomes.

B. Strategic Growth Plan and *GoCalifornia*

While significant work has been done at local and regional levels to examine goods movement infrastructure issues, the magnitude of the needs, the scope of the costs, and the complexity of implementation warrant a statewide perspective. Because of the synergies that can be gained by taking a comprehensive view of the State's overall infrastructure needs, the Goods Movement Action Plan is embedded in the Administration's $222 billion Strategic Growth Plan (SGP).[11] The SGP addresses needed upgrades to the infrastructure of California's transportation, education, flood control and water supply, public safety and public service infrastructure.[12] Specifically, the Action Plan is a $15 billion part of *GoCalifornia,* the $107 billion transportation component of the SGP for transportation-related infrastructure improvements over the next decade.[13] [14]

[10] The Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006.
[11] Office of the Governor, "Strategic Growth Plan Briefing Packet", January 18, 2006.
[12] Ibid.
[13] California Department of Transportation "Governor Arnold Schwarzenegger's Strategic Growth Plan: Transportation Investments for Mobility", September 2006.

Inherent in the relationship between the Goods Movement Action Plan and *GoCalifornia* is the realization that improving mobility of people requires improving the mobility of goods. This relationship is expressed in the *GoCalifornia* vision statement: [15]

> *"California has a safe, sustainable, world-class transportation system that provides for the mobility and accessibility of people, goods, services, and information through an integrated, multimodal network that is developed through collaboration and achieves a Prosperous Economy, a Quality Environment, and Social Equity."*

As the vision statement weaves the "3 Es" of a Prosperous Economy, a Quality Environment, and Social Equity, into the fabric of the State's future transportation system, addressing these elements collectively rather than independently increases the likelihood that successful solutions can be identified and implemented. For this reason, the Administration established a Cabinet Work Group led by the Secretaries of Business, Transportation and Housing (BTH) and the California Environmental Protection Agency (Cal/EPA) and involving other cabinet secretaries as needed to focus on goods movement issues in a collaborative and comprehensive manner.

C. Goods Movement Action Plan Process

The Cabinet Work Group developed a policy statement to underpin the formation of the Goods Movement Action Plan. The policy states (in part):[16]

> *It is the policy of this Administration to improve and expand California's goods movement industry and infrastructure in a manner which will:*
>
> - *Generate jobs.*
> - *Increase mobility and relieve traffic congestion.*
> - *Improve air quality and protect public health.*
> - *Enhance public and port safety.*
> - *Improve California's quality of life.*

With the policy statement in place, the Cabinet Work Group directed the staffs of the respective agencies to compile relevant information for each component of the policy. That work was completed in September 2005 with the release of the Phase I "foundations" part of the Plan.[17] The Phase II effort of the Goods Movement Action Plan has been underway since. The focus of this phase has been to determine the "how," "when," and "who" elements of the Plan.

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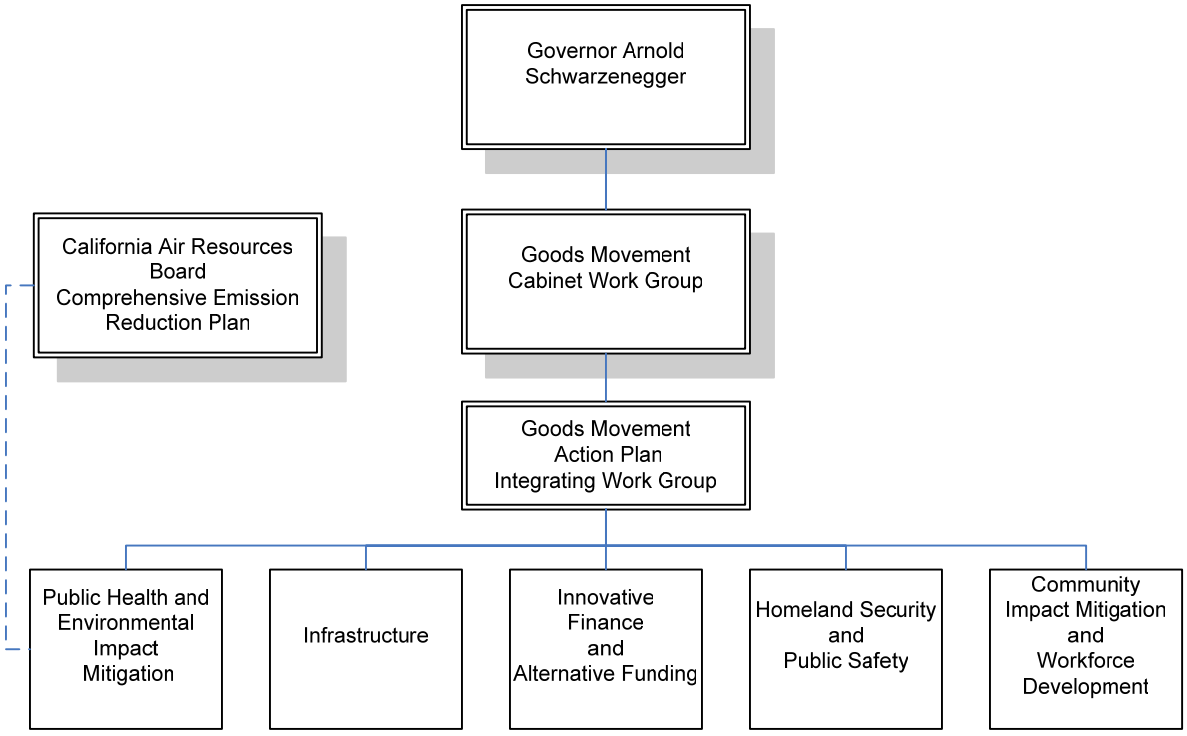
[14] California Department of Transportation, "California Transportation Plan 2025", April 2006.
[15] Ibid.
[16] Sunne Wright McPeak and Alan Lloyd, "Goods Movement in California", January 27, 2005.
[17] Business, Transportation and Housing Agency and California Environmental Protection Agency, "Goods Movement Action Plan, Phase I: Foundations," September 2005.

The Cabinet Work Group directed the Phase II effort to be conducted with the assistance of a stakeholder-based "Integrating Work Group" in order to receive the widest possible input from industry, environmental, community, technical experts, and others in an open and transparent process. As shown in Figure II-2, a series of technical work groups examined issues of infrastructure, public health and environmental mitigation, community impact mitigation and workforce development, security and public safety, and innovative finance and alternative funding. An ad hoc work group was also established to inventory advanced technologies that may have future deployment potential.

Figure II-2
Goods Movement Action Plan
Phase II Work Group Structure



As part of the Phase II process, the ARB developed its Emission Reduction Plan while playing a leadership role in Work Group meetings along with BTH and Cal/EPA. (Chapter III includes more information regarding the Emission Reduction Plan.)

In addition to the Work Group meetings, BTH, Cal/EPA and ARB held six community meetings in Phase II for the development of this Plan. The locations and dates for these evening community meetings were:

- Wilmington – February 6, 2006
- Commerce – February 22, 2006
- Oakland – February 27, 2006
- Fresno – March 15, 2006
- Barrio Logan (San Diego) – July 11, 2006
- Riverside – July 13, 2006

The agencies also solicited and reviewed written comments and convened "listening sessions" in northern and southern California.

D. Framework for Action

Developing a "framework for action" helps address the "how" and "when" aspects of the Plan. To assist with this task, BTH and Cal/EPA asked the Integrating Work Group to assist the agencies in their development of a set of organizing principles, criteria for project or action selection, metrics for performance measurement, and benchmarks for comparison with "best-in-class" performing projects from around the world. The agencies also asked each of the technical work groups to identify candidate projects and actions that may have the potential to accommodate anticipated growth in goods movement and to mitigate the related current and future public health and environmental impacts and community impacts.

Ideally, the candidate projects and actions would be evaluated not only on specific merit, but also on the contribution to overall performance improvement and degree of mitigation of the respective corridors and the statewide goods movement system. While the tools needed to perform such quantitative analyses require additional development and refinement, BTH and Cal/EPA with the assistance of Caltrans and ARB sorted and compiled the candidate actions into a preliminary candidate action array.[18]

The candidate actions were then sorted into various time frames to address the "when" aspect of the Plan. In addition to considering the practical realities of project delivery, projects and actions were grouped into time periods relative to two other factors. First, emission reduction strategies from ARB's Emission Reduction Plan that can provide near-term emission reductions were identified in coordination with ARB as immediate

[18]Prospective emission reduction actions are incorporated into ARB's Emission Reduction Plan for further consideration in ARB rulemaking proceedings.

actions. Such timing is the cornerstone of achieving simultaneous and continuous improvement – the key trust element with the corridor communities to ensure that mitigation remains a top priority.

Second, infrastructure projects and actions were arranged applying the constructs behind the System Performance Improvement Pyramid," (described in Chapter VIII) used by BTH and Caltrans to assess the precedence of transportation projects. The practical significance is that transportation projects and actions that improve performance and asset utilization through better information flow, improved maintenance, and operating practices are moved ahead of system expansion projects.

The proposed projects and actions require additional analysis and evaluation to refine costs, benefits, and required mitigation. This next step is critical because a key principle advanced by the Integrating Work Group is that total project costs must include the cost of required mitigation. Identifying such costs up front may therefore influence the overall cost-benefit and merit of a project. However, as better assessment tools become available to evaluate corridor and statewide performance improvement, localized costs of mitigation can be judged more effectively relative to broader measures of system benefit.

While complete benefits, costs, and extent of required mitigation are unknown for many of the preliminary candidate projects and actions, the aggregate set provides a path to address how the needs for system improvement and system mitigation can be met. As more detailed assessment is completed on the benefits, costs and required mitigation of specific projects, it is likely that more cost-effective alternatives may surface for some projects. Consequently, it is important to establish a continual review process so that future projects are evaluated with the most current data and assumptions. In this sense, the preliminary candidate action matrix will evolve over time as more information develops and early projects and actions are implemented.

Even though individual projects and actions may shift from a timing standpoint among the array of candidates, the broad strategies that the projects and actions are designed to address are more stable and long-lasting. For example, the majority of emission reduction strategies are based on the retrofit or replacement of high emission equipment or changes to cleaner fuels. The specifics of the type of retrofit, replacement or cleaner fuel may change due to technological developments and other factors, but the general strategy is the same. These actions can and will be taken independent of infrastructure developments.

Improving mobility and improving the goods movement system performance among and between corridors is more complex. In this Plan, sets of independent yet interlinked preliminary candidate projects and activities are grouped to provide a starting point for the selection of infrastructure projects and activities. These "solution sets" are intended to benefit entire corridors as opposed to just specific segments.

For example, a key strategy to improve mobility is to increase the share of container moves by rail and decrease the share of container moves by truck. Accomplishing this

requires implementation of a series of projects and actions. This involves adding more capacity to load and unload containers on and off railcars, removing and reducing rail system bottlenecks, expanding mainline rail capacity, and separating rail and vehicular traffic at existing rail crossings. While cost and the extent of required mitigation may change some of the projects, the collective actions will help to improve the velocity, throughput, and reliability of entire corridors, a key to improving mobility for goods and for people.

Another key solution set involves "solving" the port truck problem (i.e., addressing the challenge of reducing emissions in a cost-effective manner that recognizes the economic realities of the trucking component of the goods movement system). Doing so involves changing terminal operations to reduce non-productive time for truckers, reducing wasted trips, and finding cost-effective means for existing truck owners to upgrade or replace their equipment without disadvantaging new market entrants.

While the details and design elements of projects and actions within the solution sets require further specification, the outcomes of the solution sets are deemed to provide near-term improvements in performance and emission reductions while providing necessary flexibility for future project development. As such, these solution sets are key areas where initial emphasis should be focused. Collectively, they are the foundational building blocks for long-term system improvements and substantial emission reductions. (As noted above, emission reductions strategies under the ARB Emission Reduction Plan can and will be taken independent of infrastructure developments.)

E. Funding and Funding Mechanisms

Identifying meritorious projects and actions are only the first steps. Chapter VI of this Plan examines prospective sources and means to fund the enormous costs these actions require. The $3.1 billion available for goods movement-related infrastructure, emission reductions strategies and homeland security improvements made available from the passage of Proposition 1B[19] by California voters in November 2006 will provide a down payment to help satisfy the need. But even with full use of bond proceeds and aggressive pursuit of "fair share" federal participation, other revenues will be necessary to meet funding requirements expected to exceed $20 billion over the next decade. Equity participation from the private sector will be key to closing the funding gap.

Finally, there is the effort to answer the "who" question, or more specifically, the "who pays" question. With a price tag in excess of $20 billion over the next decade, once project costs are fully detailed (including required mitigation costs), funding the projects and actions in a fair, equitable, and expeditious way will be a steep challenge. It requires layering a diverse assortment of traditional and innovative funding sources with disciplined funding mechanisms.

[19] The Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006

F. Accountability

Accountability is key to sustaining public trust. Those who pay (whether taxpayers, users, or investors) must have the confidence that their investments will be applied to the intended purpose, and that the planned outcomes will be achieved. Relative to the Action Plan, accountability has four major dimensions. First, authorities have to be established that have responsibility and authority to address issues associated with each of the State's four goods movement corridors. While a unified, corridor-wide authority responsible for corridor performances and project delivery would be ideal, practical and legal considerations may require that multiple jurisdictions have control over appropriate corridor segments. Collectively, the corridor authority must have the ability to receive and allocate funds.

Such entities must be capable of aggregating multiple funding streams from public and private sources and fund project delivery. While existing jurisdictions may be equipped to meet these requirements, the fact that goods movement corridors cross multiple jurisdictions warrants investigation of alternative structures. Careful assessment must be undertaken to examine the merits of using memoranda of understanding (MOUs) among jurisdictions or creating new entities such as Joint Exercise of Power Authorities (JEPAs) that function across jurisdictions.

The second dimension of accountability is public acceptability, which can be achieved by providing meaningful public participation in the identification and selection of projects and the appropriate type and level of project mitigation.

The third area of accountability relates to oversight. This dimension will ensure that projects are delivered on time and on budget and that anticipated outcomes are realized.

The fourth dimension of accountability requires an ongoing commitment to the principle of simultaneous and continuous progress. Chapter VI addresses this aspect of accountability.

Finally, there must be real consequences if outcomes are not achieved. Should the authority not deliver results, alternatives should be considered for replacement structures.

G. Structure of the Plan

The structure of this Plan is as follows. Chapter III updates and adds to the foundational information and actions in the "Phase I: Foundations" report. Chapter IV describes the framework for action including the listing of principles, criteria, metrics, and benchmarks for the assessment of projects and actions. Chapter V contains the preliminary candidate actions and solution sets. The approximately 200 candidate actions developed are further defined by corridor, action type, and timeframe. The rationale, definition, and composition of the solution sets are also contained in this section. Chapter VI describes the mechanisms to ensure accountability of simultaneous and continuous improvement of both infrastructure and environmental and community mitigation. Chapter VII details

funding issues, prospective funding sources and mechanisms to administer and disperse project funds. It includes BTH's and Cal/EPA's recommendations to the CTC regarding allocation of Proposition 1B bond funds for goods movement-related infrastructure projects. It also includes BTH's and Cal/EPA's recommendation to ARB for allocation of Proposition 1B bond funds for goods movement related emission reduction strategies. It also describes regulatory and additional incentive mechanisms to achieve needed emission reductions. Chapter VIII encompasses discussion on a range of critical issues including innovative technologies, airfreight considerations, short-sea shipping and short-haul rail, land-use decision making, energy efficiency, workforce development and environmental education. Chapter IX presents the conclusions of the Plan.

III. GOODS MOVEMENT NEEDS, CHALLENGES AND ACTIONS: AN UPDATE TO THE PHASE I FOUNDATIONS REPORT

As noted above in Chapter I, the Goods Movement Action Plan Phase I Foundations report, released on September 2, 2005, characterized the "why" and the "what" of the State's involvement in goods movement in the following four segments: (1) the goods movement industry and its growth potential; (2) the four "port-to-border" transportation corridors that constitute the State's goods movement backbone and the associated inventory of infrastructure needs; (3) environmental and community impacts—as well as a preliminary description of mitigation approaches and issues; and (4) key aspects of public safety and security issues.

The Phase I report included, along with other information, extensive information regarding goods movement infrastructure needs and the air quality challenges caused by goods movement. This chapter updates that information and adds new information in other areas such as water quality impacts.

A. Growth in Goods Movement

With the world's eighth largest economy[20] and the distinction of being the place where one out of eight persons in the United States calls home, California's 37.1 million people[21] require a labyrinth of roads, railways, seaports, airports, and distribution centers to deliver the food, the clothing, and the essentials of daily life. By 2020, the net addition of another seven million people[22], the equivalent of adding the current population of the state of Virginia,[23] creates additional challenges to meet the State's own goods movement needs.

To meet these challenges, billions of dollars of investment in California's ports, rail networks, and highways will be needed to add capacity and reduce congestion. Most of this investment will center on the State's four "port-to-border" goods movement corridors: Los Angeles-Long Beach/Inland Empire, Bay Area, San Diego/Border, and Central Valley. These corridors have built up over decades encompassing large complexes that facilitate ship to rail, ship to truck, and truck to rail exchanges to move millions of containers per year to their ultimate destinations.[24]

There are clear benefits associated with international trade in California. In the Los Angeles area alone, international trade created 45,500 jobs in 2005, bringing the annual average employment to 450,100.[25] In the Inland Empire, economist John Husing notes

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[20] State of California, Department of Finance, *California's World Ranking 2004 Gross Product (In Current US$).* Sacramento, California, October 2005.

[21] State of California, Department of Finance, *E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change — January 1, 2005 and 2006.* Sacramento, California, May 2006.

[22] State of California, Department of Finance, *Population Projections by Race/Ethnicity for California and Its Counties 2000–2050,* Sacramento, California, May 2004.

[23] U.S. Census Bureau, Population Division, "Interim State Population Projections, 2005," April 21, 2005.

[24] Phase I Goods Movement Action Plan. Released September 2005.

[25] World Trade Center Association Los Angeles-Long Beach and the Los Angeles County Economic Development Corporation. International Trade Trends and Impacts: the Southern California Region. May 2006.

that investment in goods movement infrastructure would generate "a growing base of good paying jobs which its marginally educated workers can learn via on-the-job experience and learning." He goes on to note that:

> "This would appear to be the only route that the region has available to helping those workers achieve growing standards of living while simultaneously correcting the recent deep slide in Southern California's relative prosperity vis-à-vis other major parts of the country. Importantly, it would do so while helping to mitigate the environmental difficulties caused by the inevitable increase in truck and rail traffic congestion and idling diesel engines."[26]

In a report prepared for the *California Regional Economies Project*[27], the authors call attention to a *triple bottom line economic benefit.* "There is a 'triple bottom line economic benefit' to investing in goods movement infrastructure and workforce opportunities in logistics occupations:

- Economic benefits in terms of lower prices and higher productivity;
- Equity benefits for logistics workers who meet growing demand for higher skills and move up the occupational ladder; and,
- Environmental benefits from improved efficiency, reduced waste, and bottlenecks in supply chains based on investments in transportation and trade infrastructure."[28]

Right now there are significant challenges requiring action. California's own anticipated population increase, let alone its geographic position as a gateway to the Pacific Rim, are inevitable drivers of goods movement growth. The expansion of trade in California is not a matter of choice. Ignoring this reality is irresponsible. What is responsible is meeting this growing need for infrastructure investment in a manner that addresses critical system improvements and public health and environmental mitigation in a simultaneous and continuous manner.

Investment in goods movement infrastructure can yield a multitude of benefits. For instance, the Alameda Corridor Transportation Authority notes the following environmental benefits:

> "Since its opening in April 2002, the Alameda Corridor's operation has resulted in 1,688 fewer tons of Nitrous Oxide (NOx), and 69

[26] Husing, John. Logistics & Distribution: An Answer to Regional Upward Social Mobility. A report prepared for the Southern California Association of Governments. June 9, 2004.
[27] The California Regional Economies project is a joint effort of the California Workforce Investment Board and the California Economic Strategy Panel.
[28] California Regional Economies Project. Logistics and Manufacturing Value Chains: Meeting the Workforce and Infrastructure Demands of a "Real Time" Economy. July 2005. Available online at http://www.labor.ca.gov/panel/logmanufvalue.pdf

> fewer tons of particulate matter (PM). In 2005 alone, the Corridor's operation resulted in more than 1,400 tons of total emission reductions, and nearly 5,300 tons of cumulative emission reductions have occurred since the Corridor's opening."[29]

Investment in goods movement infrastructure is not just about the movement of goods, it is part of a larger strategy to reduce congestion statewide. It is estimated that 2.3 billion gallons of fuel are lost in congestion nationwide.[30] In 2003, drivers in the Los Angeles area alone burned an extra 407 million gallons of gas while spending more than 623 million hours stuck in traffic. The total cost of this delay: $10.7 billion.[31] The cost of congestion for the freight industry and its impact on productivity is estimated to exceed $70 billion a year.[32]

As part of the Governor's *Strategic Growth Plan* and *GoCalifornia Strategy*, goods movement infrastructure investment fits into the broader plan of transportation improvements. Congestion reduction is the goal of the Administration's *GoCalifornia* strategy. *GoCalifornia* recognizes that congestion is increasing statewide, eroding quality of life, and impacting the environment. *GoCalifornia* relies on a wide range of strategies such as land use decisions and public transit. Goods movement infrastructure investment is also part of this comprehensive strategy. No single course of action will address California's mobility needs. It must be a multi-pronged approach. Goods movement investments that separate truck traffic or increase the fraction of containers transported by rail are positive steps toward overall congestion reduction.

B. Public Health and Environmental Impact Mitigation: Problems, Goals, and Actions

1. Public Health

Goods movement is now the dominant contributor to transportation-related emissions in the State. As trade increases, goods movement-related emissions are expected to increase dramatically unless aggressive action is taken. Such action is critical because air pollution from international trade and goods movement in California is a major public health concern at both the regional and community level. Adverse health impacts from the pollutants associated with goods movement include but are not limited to premature death, cancer risk, respiratory illnesses, and increased risk of heart disease.

As noted above, this Goods Movement Action Plan addresses international goods movement in California's four major goods movement corridors. Applying the

[29] Alameda Corridor Transportation Authority. *Alameda corridor posts strong performance gains in 2005*. Fact Sheet. February 17, 2006. Available online at http://www.acta.org/
[30] Texas Transportation Institute. 2005 Urban Mobility Study.
[31] Southern California Association of Governments. *Remarks for the honorable Norman Y. Mineta, secretary of transportation*. May 4, 2006. Available online at http://www.dot.gov/affairs/minetasp050406.htm
[32] Ibid.

methodology in Air Resources Board (ARB) Emission Reduction Plan for Ports and Goods Movement in California (adopted April 20, 2006) to the international portion of the four corridors, ARB staff estimates that current international goods movement emissions result in approximately 640 premature deaths per year. Without additional emission controls, that figure is estimated to rise to approximately 915 premature deaths per year by 2020. Additionally, the health impacts result in work loss days and school absence days. Although this Goods Movement Action Plan addresses international goods movement in the State's four major trade corridors, it is important to recognize that the State has made a statewide commitment to reduce emissions associated with both international and domestic goods movement. For that reason, the ARB Emission Reduction Plan includes statewide public health effects information and emission reduction strategies.

2. Air Quality Goals

As set forth by the ARB Board on April 20, 2006, the State's five specific goals for addressing the air pollution associated with goods movement are:

a. reduce total statewide international and domestic goods movement emissions to the greatest extent possible and at least back to 2001 levels by year 2010;

b. reduce the statewide diesel PM health risk from international and domestic goods movement 85 percent by year 2020;

c. reduce NOx emissions from international goods movement in the South Coast 30 percent from projected year 2015 levels, and 50 percent from projected year 2020 levels based on preliminary targets for attaining federal air quality standards;

d. apply the emission reduction strategies for ports and goods movement statewide to aid all regions in attaining air quality standards; and

e. make every feasible effort to reduce localized risk in communities adjacent to goods movement facilities as expeditiously as possible.

3. ARB Emission Reduction Plan for Ports and Goods Movement in California: Purpose, Overview, and Implementation

Purpose and Overview

To achieve the five goals specified above, a key part of this Goods Movement Action Plan is the ARB Emission Reduction Plan for Ports and Goods Movement in California (Emission Reduction Plan). The Emission Reduction Plan will also be an essential component of California's actions to meet the new federal air quality standards for ozone and fine particulate (PM 2.5).

In the first (December 1, 2005) draft of the Emission Reduction Plan, ARB identified the 2001 emissions inventory as a starting point for analysis. In developing the draft Plan, ARB considered the No Net Increase strategies that are included in the June 2005 No Net Increase Report for the Port of Los Angeles. In the December 1, 2005 draft, ARB proposed to address emissions from ports and international goods movement. Based on public comment, ARB issued a new draft of the Plan on March 21, 2006, that additionally included emissions from domestic goods movement. ARB also sought scientific peer review of its health risk assessment methodology and conclusions. ARB conducted public workshops on the Plan throughout California. ARB approved the Emission Reduction Plan after considering written comments and public testimony, at a hearing held in Long Beach on April 20, 2006. In approving the Emission Reduction Plan, the ARB approved the series of goals listed above that encompass and add specificity to the four specific air quality goals from the Phase 1 report. The Board also directed ARB staff to report on its progress in implementing the Emission Reduction Plan in late 2006 and every six months thereafter.

The Emission Reduction Plan is available on the ARB web site at: http://www.arb.ca.gov/planning/gmerp/gmerp.htm

This approved Emission Reduction Plan includes:

- A health impacts assessment.
- An emissions inventory.
- Emission reduction targets.
- Emission reduction strategies.
- An assessment of benefits and costs.

The emission reduction strategies in the Emission Reduction Plan are listed in Chapter V of this report. Specifically, the strategies are listed in the Preliminary Candidate Actions table section entitled "Public Health and Environmental Mitigation – Air Quality."

Implementation

Successful implementation of the Emission Reduction Plan will depend upon actions at all levels of government and partnership with the private sector. No single entity can solve this problem in isolation. The basic strategies to reduce emissions include regulatory actions, incentive programs, lease agreements, careful land use decisions, and voluntary actions. The measures address all significant emission sources involved in goods movement including marine vessels, harbor craft, cargo handling equipment, locomotives, and trucks.

Specific actions to reduce goods movement emissions are already underway. ARB has adopted rules for sources under ARB direct regulatory authority and will

adopted additional rules in the future. Likewise, the U.S. Environmental Protection Agency (U.S. EPA) is working on national regulations affecting marine vessels, locomotives, and harbor craft, scheduled for promulgation next year. Together, ARB staff, U.S. EPA staff, and other state representatives are exploring a potential "Sulfur Emission Control Area" (SECA) designation for parts of the U.S. coastline, which would require all visiting vessels to use lower sulfur fuels. A significant amount of existing incentive funds have already been applied to goods movement emission sources, and ARB has prioritized continued funding on this source of statewide significance. Finally, several local entities are pursuing elements of the Emission Reduction Plan through their own ordinances, regulations, lease agreements, environmental mitigation requirements, and voluntary efforts.

Chapter V of this Plan includes Preliminary Candidate Actions for various action categories, including Public Heath and Environmental Mitigation – Air Quality. The preliminary candidate actions include a number of activities to implement ARB's Emission Reduction Plan. Table III-1 provides a progress report on implementation of ARB Emission Reduction Plan as of October 31, 2006.

Chapter VI of this Plan explains how verification that the emission reductions are occurring as planned will be performed. It also describes the ramifications for situations where achievement of the planned reductions is not verified.

Chapter VII of this Plan includes discussion regarding prospective funding sources for the emission reduction strategies. The chapter includes Cal/EPA's and BTH's recommendations to ARB regarding allocation of the $1 billion in Proposition 1B funds for goods movement-related emission reduction projects.

Table III-1
Progress as of October 31, 2006 for Implementation of
ARB Emission Reduction Plan for Ports and Goods Movement in California

	Immediate Actions	Short-Term Actions (0-3 years)
Ships	➢ In July 2005, the International Maritime Organization (IMO) agreed to review the emission standards for ships under MARPOL Annex VI; ARB continues to lobby via written communications to the IMO during review of these standards and will lobby the federal government to ratify the revised standards when they are enacted. ➢ The Ports of Los Angeles and Long Beach estimate that compliance with the existing, voluntary vessel speed reduction MOU with ARB and the shipping lines has increased to over 70 percent. ➢ ARB staff has finalized the rulemaking package for the ship auxiliary engine fuel rule and submitted it to the Office of Administrative Law for approval. ➢ ARB staff has finalized the rulemaking package for the cruise ship incineration ban rule and submitted it to the Office of Administrative Law for approval.	➢ The Maersk Shipping line is increasing its use of lower sulfur marine fuels (0.2% sulfur), in both main and auxiliary engines, as part of a voluntary initiative. ➢ The Ports of Los Angeles and Long Beach have proposed to require use of 0.2% sulfur fuel in ship main and auxiliary engines as a new lease condition, effective as each lease is renegotiated on renewal or reopening. ➢ In March 2006, ARB staff issued a draft report on the technical feasibility and cost-effectiveness of shore power for ships and harbor craft at 18 ports in California. ➢ The Ports of Los Angeles and Long Beach have proposed to require modifications to dockside infrastructure to accommodate shore power, to be implemented as leases are renewed or reopened. ➢ The Ports of Los Angeles and Long Beach have proposed to include vessel speed limits as a condition in leases with shippers, to be implemented as leases are renewed or reopened.

Table III-1 Progress as of October 31, 2006 for Implementation of ARB Emission Reduction Plan for Ports and Goods Movement in California		
	Immediate Actions	Short-Term Actions (0-3 years)
Locomotives	➢ By January 2007, 100 percent of captive in-state locomotives will be using low sulfur diesel fuel meeting California's specifications, and 80 percent of interstate line-haul locomotives will be using national or California low sulfur diesel fuel. ➢ ARB and the two major railroads are implementing the 1998 MOU to bring cleaner Tier 2 locomotives to the South Coast from 2005 through 2010; this accelerated phase-in is yielding emission reductions in the San Joaquin Valley and eastern desert region as the cleaner trains travel through those areas as well. ➢ ARB and the two major railroads are implementing the 2005 MOU to cut the diesel PM health risk at railyards by reducing unnecessary idling and fixing smoking locomotives. ARB staff inspections at 32 railyards in Spring 2006, showed compliance rates of 96 percent for restricted idling and 99 percent for non-smoking locomotives. The Fall 2006 re-inspections underway at the same yards are showing consistent compliance levels thus far. Risk assessments are in progress for the first phase of nine designated railyards. In April and July 2006, ARB held technology conferences to identify and share information on the status and effectiveness of stringent emission controls for locomotives. ➢ As of October 2006, ARB has trained over 30 of its own staff to enforce the locomotive idling restrictions, as well as over 30 air district staff and a dozen railroad employees.	➢ The Ports of Los Angeles and Long Beach have proposed to accelerate the replacement of switcher and line-haul locomotives that operate on port property with cleaner models.

Table III-1
Progress as of October 31, 2006 for Implementation of
ARB Emission Reduction Plan for Ports and Goods Movement in California

	Immediate Actions	Short-Term Actions (0-3 years)
Trucks	➢ As of September 2006, all diesel trucks fueling in California started using low sulfur fuel meeting ARB specifications. ➢ ARB has focused its truck inspection efforts on impacted communities, with multiple environmental strike forces conducted in communities adjacent to the major ports in Los Angeles, Long Beach, and Oakland. ARB inspectors check for excessive smoke, required software upgrades, and required U.S. equivalent emission controls on international trucks. ➢ About 70 percent of eligible trucks had software upgrades (to reduce excess nitrogen oxide emissions) completed by October 2006, when the courts overturned ARB rule that required faster implementation than a national settlement agreement. ➢ ARB and the local air districts continue to provide incentives to accelerate upgrades or replacement of older trucks.	➢ Between April and October 2006, ARB staff held five public meetings and released draft regulatory concepts for the fleet rule to clean up privately-owned trucks traveling on California roadways. ➢ In April 2006, ARB staff released a draft report "Evaluation of Port Trucks and Possible Mitigation Strategies." Staff also held public meetings over the Summer 2006 in San Pedro and Oakland to begin developing the proposal for a comprehensive port truck modernization program. ➢ The Ports of Los Angeles and Long Beach have proposed to replace trucks that visit the ports frequently with new diesel and liquefied natural gas models. ➢ Model year 2007 trucks meeting more stringent California and U.S. emission standards began introduction in October 2006.
Cargo Handling Equipment	➢ As of September 2006, all diesel cargo handling equipment started using ARB low sulfur fuel. ➢ ARB finalized its rulemaking for intermodal cargo handling equipment and submitted the package to the Office of Administrative Law.	➢ In May 2006, ARB adopted emission standards for new forklifts and fleet cleanup provisions for existing forklifts and other gas industrial equipment. ➢ The Ports of Los Angeles and Long Beach have proposed to accelerate cleanup of on-port cargo handling equipment.

Table III-1 Progress as of October 31, 2006 for Implementation of ARB Emission Reduction Plan for Ports and Goods Movement in California		
	Immediate Actions	Short-Term Actions (0-3 years)
Commercial Harbor Craft	➢ ARB and the local air districts continue to provide incentives to accelerate upgrades or replacement of older harbor craft.	➢ As of October 2006, ARB staff has held seven public meetings specifically to discuss development of a rule to clean up harbor craft through replacement, retrofit, or alternative fuels. In September 2006, staff released draft rule language for public review. ➢ The Ports of Los Angeles and Long Beach have proposed to upgrade the harborcraft that service the port with cleaner engines. ➢ In January 2006, harbor craft in the South Coast started using low sulfur diesel fuel meeting ARB specifications. This provision will apply statewide in January 2007. ➢ In March 2006, ARB staff issued a draft report on the technical feasibility and cost-effectiveness of shore power for ships and harbor craft at 18 ports in California.

4. Water Quality

Background Information

California's waterways have served as vital transportation corridors for as long as the State has been inhabited. Even though the economy today uses them in different ways than we did a hundred years ago, they are no less important. In fact, they are likely even more important today, and their maintenance and protection are critical to the State's economic future.

These same waterways used for shipping navigation and movement of goods, are also parts of the State's drinking water system and recreational areas and support a diverse ecology that is important to the vitality of California. In essence, the State's waterways serve a myriad of beneficial uses, and their maintenance and protection is essential. In addition, goods movement and transportation require land-based activities (e.g., road construction, terminal development, etc.) that also can significantly impact the State's waterways. To this end, it is essential that water quality be considered and protected when focusing on goods movement and transportation.

Goods Movement-Related Water Quality Impacts

Container ships and port operations can have significant impacts on water quality including, but not limited to, dredge and fill discharges, water pollution from runoff, aquatic-related habitat loss or modification, and invasive species. Effective policies, requirements and actions, including pollution prevention and low-impact development, are available to address these impacts – both in the goods movement area and more generally. Goods movement-related water quality impacts and water quality requirements and actions are discussed below.

Dredging and Filling

Due to the anticipated increased container ship and other vessel traffic, and the associated development of berthing facilities and access channels, the volume of California port maintenance dredging and filling operations is expected to increase to allow these vessels to enter, load and unload, and exit the ports. Sediments in port areas are often contaminated with heavy metals and toxic organic compounds. The negative water quality impacts resulting from dredging and filling activities occur both in the dredged/filled location and upland areas that receive dredged materials and include habitat loss (or modification) and pollution of surface and ground water.

Turbidity and subsequent re-deposition of sediments resulting from dredging operations can reduce habitat value for fish and other mobile organisms, and can be lethal for attached or slow-swimming species. Re-suspension of toxic constituents can spread sediment contamination from localized "hot spots" to

areas not previously contaminated. This can cause lethal and sub-lethal effects in benthic (sediment-dwelling) and other sediment-associated organisms. Pollution of ambient water at the dredge location can expose certain organisms to this pollution.

Sediment pollutants can effectively reduce or eliminate species of recreational, commercial, or ecological importance, either through direct toxic effects or by effects on the food supply that sustainable populations require – thereby impairing the beneficial uses of surface waters. Furthermore, some sediment pollutants such as mercury can bioaccumulate through the food chain and pose health risks to wildlife and human consumers even when sediment-dwelling organisms are not themselves impacted. Additionally, groundwater has been polluted in some upland areas that have been used for disposal of dredged spoils, which impairs the groundwater's beneficial uses.

Water Pollution from Runoff and Pollutant Deposition

Example pollutants currently targeted for Total Maximum Daily Load (TMDL) development and implementation in port-area water bodies include: various pesticides; polyaromatic hydrocarbons (PAHs); copper; polychlorinated biphenyls (PCBs) nickel; lead; mercury; sediment toxicity; bacteria/pathogens; and exotic species.

Aerial deposition (both during dry and wet weather) of air pollutants associated with goods movement is also a water quality issue. These pollutants make their way to surface waters either through direct deposition, or in runoff from the largely impervious surfaces of a port. These by-products of combustion are largely monitored either as particulate matter, or as nitrogen and sulfur compounds. However, these combustion by-products may contain other constituents that threaten the beneficial uses of the State's waters.

In addition, there may be substantial pollutant loading associated with leaks from trucks and other vehicles, lubricating materials used in routine maintenance of the equipment used at the port, and from bulk cargo at the ports. The discharge of these types of pollutants will increase as overall goods movement in California increases unless appropriate actions are taken.

Other Discharges to Coastal Waters

Oceangoing vessels can intentionally or unintentionally discharge various other pollutants into the marine waters of the State, including graywater, sewage, sewage sludge, oil bilge water, and hazardous wastes. Chapter 588, Statutes of 2005 (SB 771, Simitian) and a March 2005 court ruling have resulted in increased interest in characterizing, reporting upon, and controlling waste streams from oceangoing vessels. The State Lands Commission reports that commercial vessel traffic has continued to increase, and the most recent

figures indicate that a total of approximately 6,800 vessels make 10,000 visits to California's ports per year. As container ship traffic increases, the number of accidental spills and discharges due to normal waste management procedures will likely increase proportionately.

Invasive Species

Vessels in California's coastal waters discharge a variety of waste streams, including the unintentional release of non-indigenous aquatic species that are contained in ballast water discharges. Studies have shown that the release of non-indigenous aquatic species through these mechanisms has become a significant problem worldwide. The release of non-indigenous aquatic species can impair the beneficial uses of water. For example, non-indigenous species can: 1) successfully out-compete indigenous (and sometimes endangered/threatened) aquatic species for habitat and food; 2) create navigation hazards; 3) introduce pathogens into California's waters; 4) damage levees and other control works; and 5) generally disrupt established freshwater and marine ecosystems. These organisms can have damaging effects on commercial and recreational activities such as shellfish harvesting, fishing, boating, and swimming.

Policies, Requirements and Actions to Address Goods-Movement Related Water Quality Impacts

The State Water Resources Control Board (State Water Board) has established policies that apply to the potential water quality impacts associated with goods movement activities. Key examples are the State Water Board's anti-degradation policy (State Water Board Resolution 1968-0016) and water quality enforcement policy (State Water Board Resolution 2002-0040). In addition, the Ocean Plan, the State Implementation Policy and the California Toxics Rule collectively serve as statewide plans governing California's ocean waters, inland surface waters, and enclosed bay and estuarine water. The nine Regional Water Quality Control Boards all have Basin Plans that establish beneficial uses for the State's waters within their jurisdiction. Water quality standards are the basis for the Water Boards' regulatory activities and are represented by the application of either the anti-degradation policy or a combination of beneficial uses and water quality objectives (usually found in the statewide plans).

In addition, the State Water Board has made a precedential decision requiring all municipal separate storm sewer systems (MS4s) to implement Standard Urban Storm Water Mitigation Plans (SUSMPs). All port areas in California are within MS4 jurisdiction, and some port districts are permittees to the various National Pollutant Discharge Elimination System (NPDES) permits for MS4s in California. SUSMPS require all new development in the ports and other areas subject to them to meet specific, minimum performance standards that apply many of the same principles of low impact development.

The State and Regional Water Boards have various regulatory programs that must be coordinated and applied to address impacts from goods movement activities, including: storm water; dredge and fill; land disposal; non-point source; TMDLs; NPDES; Areas of Special Biological Significance (ASBS); Sediment Quality Objectives; and watershed management. The State Water Board is leading a collaborative stakeholder effort to develop new sediment quality objectives that will serve to better protect the water quality standards in California's ports and harbors.

The State Water Board currently administers several financial assistance programs directed at improving water quality in coastal areas. Existing bond-funded programs related to the coast include Clean Beaches, Coastal Non-Point Source Pollution Control, Santa Monica Bay Restoration, and Urban Storm Water Grants. These programs, however, are largely designed to mitigate the problems after they occur.

Pollution Prevention/Impact Avoidance

Pollution prevention, particularly in the area of storm water runoff, can be very effective in avoiding many of the impacts discussed above. Water quality management, transportation management, and land use planning can be effectively integrated by consideration of strategic growth and low impact development principles that include:

- The overall site hydrology is used as the key organizing principle (e.g., match the initial abstraction and mimic a natural water balance, employ a uniform, strategic distribution of small-scale controls, decentralize controls and disconnect impervious surfaces, etc.).

- Project/community design should be compact, mixed use, walkable and transit-oriented so that automobile-generated urban runoff pollutants are minimized and the open lands that absorb water are preserved to the maximum extent possible.

- Natural resources such as wetlands, flood plains, recharge zones, riparian areas, open space, and native habitats are identified, preserved and restored as valued assets for flood protection, water quality improvement, groundwater recharge, habitat, and overall long-term water resource sustainability.

- Water holding areas such as creek beds, recessed athletic fields, ponds, cisterns, and other features that serve to recharge groundwater, reduce runoff, improve water quality and decrease

flooding are incorporated into the urban landscape and protected from physical, chemical and biological impacts.

- All aspects of landscaping from the selection of plants to soil preparation and the installation of irrigation systems are designed to reduce water demand, retain runoff, decrease flooding, and recharge groundwater.

- Permeable surfaces are used for hardscape. Impervious surfaces such as driveways, streets, and parking lots are minimized so that land is available to absorb storm water, reduce polluted urban runoff, recharge groundwater, and reduce flooding.

Water Quality Actions

Preliminary Candidate Actions to protect water quality, including actions related to these principles, are included in Chapter V.

5. Hazardous Waste Management/Site Remediation

Background

The discovery of historic site contamination during infrastructure construction can create potential public health issues and add significant cost and delay to the project. If the approach for addressing such a discovery is planned for up-front for the project, potential public health impacts, delays and costs can be minimized.

It is desirable to address project construction and any hazardous waste management/site remediation issues concurrently – as opposed to managing the hazardous waste management/site remediation issues after the project construction. This concurrent approach ensures that contaminated media and hazardous wastes are managed efficiently and appropriately.

Goods Movement Infrastructure Project Hazardous Waste and Contaminated Media Management Plan and Statewide Hazardous Waste and Contaminated Media Management Plan

The entity which implements an infrastructure project under the Goods Movement Action Plan should develop a Hazardous Waste and Contaminated Media Management Plan for goods movement-related infrastructure projects to address any hazardous waste and hazardous substance contaminated media encountered during the design and construction of the infrastructure project in question. The Department of Toxics Substances Control (DTSC) within Cal/EPA will prepare a statewide Hazardous Waste and Contaminated Media Management Plan that will serve as guidance for the development of the project-specific plans. DTSC will

also make information available regarding hazardous management requirements. DTSC will also make information available regarding waste minimization and treatment options to reduce public exposure to remediation wastes and other impacts of hazardous substances mitigation.

Where information regarding historical site usage is available, early identification of hazardous waste and hazardous substances should be built into the environmental review process for infrastructure projects. In addition, local agencies should be consulted regarding site history information. Successful implementation of this work to address hazardous waste/substance issues early in the process will depend upon close coordination between the implementing agencies and State regulatory agencies.

6. Fumigation of Exported and Imported Goods

Background

Some goods (e.g., some agricultural commodities) are fumigated upon entering California or prior to export. Since fumigants are both toxic and gaseous, their off-site movement can pose hazards if not adequately regulated. In California, fumigants are subject to a restricted material permit process administered by the County Agricultural Commissioner's Office (CAC) under the direction of the Department of Pesticide Regulation (DPR). The regional and local air districts also have jurisdiction over emissions to the air of pesticides.

DPR and the County Agricultural Commissioners have implemented the nation's strictest regulatory requirements on use of fumigants. As part of the restricted material permit process, the CAC must ensure that the fumigations to do not pose an unacceptable risk to workers and surrounding communities. In placing conditions on the permit, the CAC rely on permit guidance provided by DPR.

DPR has conducted risk assessments and placed mitigation measures on methyl bromide and other fumigants. DPR risk assessments are subject to external peer review. For example, the National Academy of Sciences and the Office of Environmental Health Hazard Assessment (OEHHA) within Cal/EPA have peer reviewed DPR methyl bromide risk assessment. The health endpoints that DPR uses in its risk assessments are equivalent to those provided to air districts by OEHHA for air toxics regulation. DPR risk assessments rely on all available scientific studies including air monitoring conducted by DPR and the Air Resources Board (ARB). DPR permit guidance, which is used by the CAC in developing control strategies, follows the mitigation guidance used by ARB and the air districts. Additionally, all fumigations are reported to the CAC and DPR as part of California's full pesticide use reporting program.

Fumigant-Related Issues

During the Goods Movement Action Plan Phase II public process, community groups raised questions regarding the location and extent of fumigation of cargo containers at the ports in close proximity to communities. They asked questions regarding potential community health impacts from container fumigation. They requested that notification procedures be considered and developed in order to afford notice to those in close proximity to the fumigation.

Fumigant-Related Actions

In response to the questions and issues raised, DPR has conducted initial meetings with the community groups in order to share information regarding the regulation of fumigants and to better understand the concerns. At this writing, DPR is compiling the following information to share with these community groups regarding fumigant use at the Port of Los Angeles, the Port of Long Beach, the Port of Oakland, and the Port of San Diego:

- Copies of permits for fumigant use
- Pesticide use information
- Description of the fumigation practice
- Potential mechanisms for easier public access to permits and public input into the review of permits.

DPR is also evaluating notification issues. Meetings with DPR, other regulators and communities regarding the concerns of the community organizations will continue in 2007.

C. Community Impact Mitigation and Workforce Development

The communities adjacent to the State's goods movement corridors have endured a disproportionate share of the impacts from a system that provides statewide and nationwide benefits. In the Phase II process, many residents and community representatives have shared that the number one concern is protecting public health and reducing the air pollution and health effects associated with goods movement-related air pollution. To address that concern, ARB has developed within the Phase II process the Emission Reduction Plan for Ports and Goods Movement in California. (See Section B.3.) ARB has already started implementing this Plan – well ahead of the start of construction of needed infrastructure improvements. Based on public input, ARB has designed this Plan to reduce *both* existing air pollution and health impacts *and* expected increases in air pollution and health impacts due to growth in goods movement. Additionally, Chapter VI of this document calls for progress review and ramifications if adequate process is not made in meeting the goals of the Emission Reduction Plan.

In addition to air pollution and the associated health effects, community impacts include truck traffic, noise, lights, and visual blight. In the Phase II process, BTH, Cal/EPA and

ARB have conducted work group meetings, conducted community meetings in affected communities, and reviewed written comments to learn what residents suggest are corrective measures to address these impacts which can affect quality of life. The policy statements below are based on the suggestions heard during the public process. Chapter V includes Preliminary Candidate Actions in this area that are based on suggestions received during the public process. (It should be noted that various agencies have jurisdiction over the preliminary candidate actions. Some of the actions relate to project-specific mitigation under the California Environmental Quality Act.) Chapter VII provides specific recommendations by BTH and Cal/EPA for community impact mitigation-related conditions on the California Transportation Commission's allocation of infrastructure bond funds (funds subject to legislative appropriation).

1. Agency Coordination

Decision makers at the federal, state, regional and local levels make goods movement-related decisions. Given the extent and complexity of activity in this area, decision makers need to coordinate in new and unprecedented ways. Coordination among the decision makers is critical, and in many cases, it is required by law.

2. Community and Stakeholder Input

Communities and other stakeholders need to be respected in the development of good movement related plans and in the assessment of specific goods movement-related projects. Effective, regular communication in the public processes is critical. Respect for communities and other stakeholders by all of the involved agencies is critical.

Community Advisory Committees

Goods movement projects that are in a regional transportation plan (RTP) or regional transportation improvement program (RTIP) and have gone through the environmental review process should go forward. Goods movement infrastructure projects that are in an RTP or RTIP but, have not completed environmental review, and all new goods movement projects, when they reach the project Environmental Impact Report/Environmental Impact Statement stage should have a Community Advisory Committee similar to the I-710 process. (However, the I-710 process is a prototype more than a model, and it needs to be improved.) Community Advisory Committees are also discussed in the context of simultaneous and continuous improvement in Chapter VI and in the context of bond funding allocations in Chapter VII.

3. Issue Linkages

Much of the Phase II process focused on the linkage between goods movement and air quality. A key deliverable from the Phase II process was the ARB Emission Reduction Plan for Ports and Goods Movement in California. The Phase II process

also highlighted other linkages which are important to communities. For example, the Phase II process started a dialogue regarding goods movement-related job opportunities that could benefit communities. The discussion focused on the creation of a career ladder for goods movement-related jobs and the need for training for various "rungs" on that career ladder. Community representatives emphasized the need for training in the community for safe, clean jobs. Chapter V includes Preliminary Candidate Actions in this area of workforce development.

Communities in California, including those within the goods movement corridors, face other challenges related to education, affordable housing, etc. These issues also affect quality of life today and in the future. Under State law, such policy/program areas are addressed in specific programs by specific agencies with jurisdiction. However, by having two members of the Governor's Cabinet lead the development of Goods Movement Action Plan, the process has allowed for the sharing of information regarding goods movement issues with many leaders for other State programs, and vice versa. This sharing of information, which will continue after the publication of this Goods Movement Action Plan, allows for the active consideration of goods movement issues in the management of other State programs.

4. Project Funding

The total cost of a goods-movement related infrastructure project should include the cost of required project-specific mitigation and the total cost should be funded as the cost of the project. (See also Chapter VII regarding bond funding allocation.)

5. Noise Mitigation

In the Goods Movement Action Plan process, community representatives have repeatedly raised concerns about excessive noise from goods movement operations. With the exception of occupational noise, the State does not regulate noise. Rather, noise is regulated by local governments in general plans and in ordinances. In response to the concerns raised by communities, BTH, with staff support from Caltrans, will prepare a compendium that provides information regarding practices that have been found to be effective in mitigating excessive noise from goods movement operations. BTH/Caltrans will consult with experts in the field, local governments, and the public in the development of the compendium and will share the document with local governments and the public upon its completion. BTH/Caltrans welcomes public input regarding information that should be considered in this effort.

D. Public Safety and Homeland Security

California's goods movement system presents a variety of concerns relative to public safety and homeland security. From a public safety perspective, the large volume of truck trips and train movements contribute to traffic accidents and related property damage, injuries, and fatalities. Homeland security threats, primarily among the

State's seaports, are likely to persist due to the potential economic disruption to the State and the nation that could result from a significant event. For these reasons, it is critical that efforts to improve public safety and strengthen homeland security are included as key elements of the Action Plan.

To address public safety concerns, a primary focus of this Plan is to reduce the number of at-grade crossings between train and mixed flow traffic. The Alameda Corridor East project is a prime example. Also, efforts to establish dedicated truck lanes by separating truck traffic from other mixed flow traffic help to improve public safety as well. However, since trucks cannot be completely isolated from other traffic, efforts to improve the safety of trucks need to continue. Expanded truck inspection facilities to make sure that safety equipment is properly installed and maintained will be needed. Colocating such facilities with inspection of truck cargoes for homeland security purposes is an alternative that may provide\ economies and scale and reduce disruption to the flow of goods. However, more analysis is required to determine the merits and practicality of such efforts.

Securing California's ports has been a priority for the Administration. The Governor's Office of Homeland Security (OHS) serves as the State's lead agency for the protection of California's critical infrastructure, including ports. OHS serves as the State administering agent for federal homeland security grants and as the primary liaison with the U.S. Department of Homeland Security (US-DHS). Additionally, OHS is a member of the three area maritime security committees that have been established in California (Northern California, Central California Coast and San Diego). These committees are chaired by U.S. Coast Guard Captains of the Port. It is the responsibility of these Committees to identify and build awareness of potential threats to port areas, to protect the ports through improved security procedures and communications, and to implement security procedures to decrease port vulnerabilities.

US-DHS administers security procedures at U.S. ports and rail yards, employing the resources of the Transportation Security Administration (TSA), the U.S. Coast Guard, U.S. Customs and Border Protection (Customs), and the U.S. Citizenship and Immigration Service (Immigration) in conjunction with the Department of Transportation's Maritime Administration and Federal Railroad Administration.[33]

Recognizing the expanded need for coordination and information sharing between the federal, state and local governments at our ports, Governor Schwarzenegger signed an executive order creating the California Maritime Security Council (CMSC). The CMSC will be comprised of top officials from OHS, U.S. Coast Guard, BTH, National Guard, U.S. Navy, and other agencies, as well as Directors of California's major ports and representatives from the labor and business communities. The specific duties of the CMSC include: identifying potential threats, improving security measures, procedures, and communications; coordinating contingency planning; coordinating information sharing; conducting training exercises; developing a

[33] Phase I Goods Movement Action Plan. Released September 2005.

statewide maritime security strategy; and preparing to quickly recover from a catastrophic event at a California port.[34]

While the federal homeland security grant programs provide resources to the State for many goals related to the prevention of terrorist attacks, one area that is under-funded is the protection of seaports. The California Port Security Grant Program (CPSGP) will provide additional resources from the Port Security Bond Act to improve the security of various maritime assets throughout the State. The bond funds are an important supplement to the existing OHS programs coordinated with US-DHS and the federal port grant programs.

This program will be coordinated with the Governor's Office of Emergency Services (OES), which shares with OHS various preparedness and grant administrative functions. By helping to improve the security of seaports, the California Port Security Grant Program will contribute significantly to the success of both California's strategy and the *National Strategy for Homeland Security*. Funds awarded through the Port Security Bond Act may be leveraged to draw down additional federal port security grants.

The California Port Security Grant Program will build upon existing efforts at the federal, State and local level by funding security gaps identified by previously conducted port vulnerability assessments. This grant program will aid the implementation of security strategies developed by the three Area Maritime Security Committees and the CMSC. Specifically, eligible activities under this grant program include:

- Video surveillance equipment.
- Explosives detection technology, including, but not limited to, X-ray devices.
- Cargo scanners.
- Radiation monitors.
- Thermal protective equipment.
- Site identification instruments capable of providing a fingerprint for a broad inventory of chemical agents.
- Other devices capable of detecting weapons of mass destruction using chemical, biological, or other similar substances.
- Other security equipment to assist in any of the following:
    - Screening of incoming vessels, trucks, and incoming or outbound cargo.
    - Monitoring the physical perimeters of harbors, ports, and ferry terminals.
    - Providing or augmenting onsite emergency response capability.
    - Overweight cargo detection equipment, including, but not limited to, intermodal crane scales and truck weight scales.

[34] Office of the Governor. Press Release "Gov. Schwarzenegger Signs Executive Order Creating California Maritime Security Council." October 12, 2006

- Developing disaster preparedness or emergency response plans.

While the bond measure provides a wide range of eligible funding categories for cargo security and physical security, special attention is needed to ascertain the best use of the State's funds. Specifically, many cargo-related security functions are within the exclusive domain of the federal government. Equipment purchases for cargo inspection may be less effective than equipment or infrastructure for physical security if control and operation of cargo security systems require expanded federal personnel that may be unavailable. Focusing on deficiencies in federal funding for physical security systems such as systems that provide or enhance marine-side or land-side domain awareness may provide the best use of bond funds.

IV. FRAMEWORK FOR ACTION

As part of the Goods Movement Action Plan Phase I Foundations report, more than $47 billion of prospective infrastructure projects were identified that could improve the capacity or performance of California's four port-to-border goods movement corridors. Many of these proposed projects have received extensive review at the local or regional levels by Metropolitan Planning Organizations (MPOs) or Regional Transportation Planning Authorities (RTPAs) and are included in Regional Transportation Plans (RTPs). The projects undergoing such review follow California's transportation planning process as outlined in Appendix B. However, the conventional transportation planning and review process is not structured to evaluate prospective goods movement projects as changes to a statewide goods movement system. Consequently, project priorities and program funding do not necessarily reflect the project mix that best improves the performance of the goods movement system overall. Similarly, the existing process does not systematically address projects or actions that can mitigate public health and environmental or community impacts that are due to goods movement activity.

It is these deficiencies that this Goods Movement Action Plan is intended to resolve. Specifically, a statewide perspective enables:

- Assessment of projects as part of a statewide goods movement system.
- Comparison of port, rail, and highway projects in a common framework.
- Identification and implementation of critical public health and environmental mitigation and community impact mitigation actions in order to protect public health and improve the environment and quality of life.
- Prioritization of projects and actions to address the most important needs first.
- Concentration of effort to secure required funding in an orderly fashion.
- Evaluation of performance to determine if State, regional, and community benefits are achieved.

A systematic and transparent "framework for action" is necessary if these benefits are to be achieved. Building the Goods Movement Action Plan framework on a performance measurement platform ensures that the evaluation, selection and funding of projects and actions will be conducted in a way that achieves an efficient and effective allocation of resources.

The framework is built on a foundation of internally consistent principles aligned with Administration policy. Consistent with a defined set of principles, a series of evaluation criteria are established to judge the merits of prospective projects or actions. Criteria are defined for infrastructure and operational improvements, environmental impact mitigation, community impact mitigation, and public security/safety. Concurrently, performance metrics are established, where appropriate, to quantify and assess outputs and outcomes relative to expectations. Finally, sets of benchmarks are developed, where appropriate, to judge how performance relates to "best-in-class" for comparable projects or actions executed elsewhere.

Developing the principles, evaluation criteria, performance metrics, and benchmarks is a challenging task when applied to a system as complex as goods movement. The task is

compounded by the nature of the system as a series of discrete operations that begin and end outside the State's boundaries. Each segment, whether ocean carrier, port and terminal operator, trucker, railroad, distribution center, or retailer, attempts to optimize its own operations while accommodating the needs of their upstream and downstream counterparts. Achieving system-wide improvements that result in aggregate performance enhancements requires a high degree of cooperation and accommodation among all the segments of the logistics chain.

Clearly, the development of relevant and meaningful criteria, metrics, and benchmarks for California's goods movement system is an iterative process that will improve as the dynamic behavior of the system and its impacts are better understood. Nonetheless, decisions must be made now based on the best information available. Described below are principles, criteria, metrics, and benchmarks compiled based on input from the stakeholders and subject matter experts of the Integrating Work Group, the supporting work groups, and members of the public that have participated in the Phase II effort.

A. Principles for Implementation

The Administration's Goods Movement Policy Statement (see Preface) establishes the basis for a series of principles that define the nature, timing, and manner by which California's goods movement industry and infrastructure will be improved and expanded. Specifically, the policy statement requires that the improvements be undertaken in a manner which will:

- Generate jobs.
- Increase mobility and relieve traffic congestion.
- Improve air quality and protect public health.
- Enhance public and port safety.
- Improve California's quality of life.

Members of the Integrating Work Group suggested a wide range of potential principles. Ultimately, BTH and Cal/EPA enumerated a series of 22 principles based in large part on the input from the Integrating Work Group. While covering a diverse set of issues, the principles can be grouped under the following five themes:

- Consider the four port-to-border corridors as one integrated system.
- Undertake simultaneous and continuous improvement in infrastructure and mitigation.
- Pursue excellence through technology, efficiency, and workforce development.
- Develop partnerships to advance goals.
- Promote trust, provide for meaningful public participation, and ensure environmental justice consistent with State law.

The full set of principles grouped by these themes is listed below.

Consider the four port-to-border corridors as one integrated system.

1. Consider all goods movement infrastructure and related operations throughout the State as part of one integrated, multi-modal system regardless of funding or ownership (i.e., public, private, or mixed public-private). Such a perspective highlights improvements that can maximize public benefit, leverage existing assets, encourage private investment, promote stability and diversity, and expand customer choices.

2. Optimize existing capacity and efficiency of operations to right-size the need for expanded infrastructure. Utilizing existing resources to best advantage improves overall cost effectiveness.

3. Avoid changes to one part of the system that damage another part of the system. As an interconnected system, upstream and downstream impacts must be considered when contemplating changes.

4. Maintain and plan for adequate infrastructure at the ports capable of receiving, storing and distributing energy fuels. The State's interest in maintaining and planning for a reliable energy supply for its people and its economy requires that the specialized needs of delivering energy stocks be considered in land use decisions at the State's ports.

Undertake simultaneous and continuous improvement in infrastructure and mitigation.

5. Approach infrastructure and mitigation actions on a simultaneous and continuous improvement basis. Approach funding and implementation for infrastructure and mitigation on a simultaneous basis. The State's economy and quality of life depend upon the efficient, safe delivery of goods to and from the ports and borders. At the same time, the environmental impacts from goods movement activities must be reduced to ensure protection of public health and the environment. Actions necessary to protect public health and mitigate environmental and community impacts must be funded and executed on a simultaneous and continuous basis. While infrastructure projects may have regional, statewide, or nationwide benefits, local public health, environmental and community impacts must be mitigated.

6. Evaluate infrastructure and public health and environmental/community improvement actions on their merits first without regard to funding sources. Once relative merits are established, consider the practical concerns of funding sources and limitations when determining which choices to select.

7. Advance actions with highest rates of return – both in terms of investment and public health and environmental improvement. Because resources are always limited, ranking actions on a statewide basis relative to their contribution to performance improvement of the entire statewide goods movement system and relative to their potential to improve public health and environmental protection will allow investments to be targeted to actions that advance the highest rates of return in all of these areas.

8. Identify significant public health/environmental and community impacts, provide needed resources and implement strategies to mitigate those impacts. Environmental, public health and community impact mitigation must be fully integrated into goods movement system improvements. The total cost of a goods-movement related infrastructure project should include the cost of required project-specific mitigation and the combined cost should be funded as the cost of the project. Peer-reviewed science should be used in this process. Mitigation strategies must not create localized public health and environmental impacts. Incentive programs, in addition to regulatory mandates, may help to achieve needed additional improvements.

9. Implement community impact mitigation for existing goods movement facility community impacts on a priority basis (i.e., address the most impacted communities first). The priorities should be based on objective criteria. The existing impacts and health risks at and adjacent to existing goods movement facilities (e.g., in close proximity to ports, railroad yards, high truck volume highways and at distribution centers) must be significantly reduced. While community impact mitigation is implemented on a priority basis, the need to ensure environmental justice for all Californians must be kept in mind.

10. Accelerate on a simultaneous basis both action delivery and public health and environmental protection. By their nature, infrastructure projects are long lead-time endeavors that face many obstacles until they are placed into service. Relating the importance of both goods movement actions and public health and environmental improvement to the State's economic well-being will help keep actions on schedule and provide motivation for aggressive action to relieve local communities from unfavorable goods movement-related impacts. "Accelerate (…) action delivery" does not mean weakening environmental review for infrastructure projects.

11. Recognize action benefits within, between, and among goods movement corridors that are otherwise ignored or undervalued. When action merits are evaluated by traditional metrics, the value an action may have to the State at large may not be captured. Examples include goods movement actions that can relieve bottlenecks and increase throughput for an entire transportation corridor. Properly identifying benefits helps prioritize actions and secure funding for the actions that can do the most good.

12. Consider land use implications in goods movement decisions. Consider goods movement implications in land use decisions. ARB's April 2005 Land Use Handbook, the BTH *GoCalifornia* program, and other sources can aid such analyses.

13. Develop and apply performance metrics for both infrastructure and public health and environmental/community improvement actions. Performance metrics for goods movement projects and mitigation actions provide a comprehensive means to determine the effectiveness of deployed resources.

14. Seek opportunities to promote synergies with other statewide policy initiatives. Active consideration of goods movement issues with statewide initiatives in areas such as housing, health services, land use, agriculture, international trade, economic development, military base re-use, and energy resources promotes good public policy. Most of all, achieving the Administration's purpose will require flexibility, perseverance, and commitment.

Pursue excellence through technology, efficiency, and workforce development.

15. Utilize the most innovative, effective and commercially proven technologies available when modifying or expanding California's goods movement system and when reducing associated pollution. Significant investment in emission reduction strategies such as fleet modernization, the use of cleaner fuels, the adoption of cleaner emission control technologies and innovative technologies is necessary in order for California to accommodate the expected growth in goods movement and continue progress in protecting the environment.

16. Educate the public regarding workforce opportunities in the goods movement industry. There is significant job potential in this area. A defined career path and education regarding that career path are needed. Training programs are needed in the neighboring communities for safe and clean jobs. Training programs in California's universities and colleges may also be needed.

Develop partnerships to advance goals.

17. Secure statewide consensus on actions when pursuing federal support. A major factor that causes California to get less than its "fair share" of federal funding is intrastate jockeying for limited federal dollars. Presenting a unified, statewide slate of actions (as most other states do) helps increase the likelihood for the State to receive its fair share allocation.

18. Spur private sector investment and public-private partnerships to leverage public investment. The goods movement system is a complex supply chain of activities and facilities under private, public, and mixed public-private ownership. Gaining consensus on a statewide basis for the major elements

necessary to build out the State's goods movement system helps provide the confidence needed by the private sector to determine how best to make private and public-private investments that add value to the system.

19. Provide a higher-level forum to engage cooperation outside State jurisdiction. California's goods movement system requires cooperation and support from stakeholders who are not subject to California control. These include adjacent states, the federal government, and foreign carriers. In addition, other stakeholders that operate in the State, but have national or global operations (including retailers, railroads, and logistics companies) are critical participants in the process. Operating at the State level with these stakeholders improves the State's overall position as compared to merely allowing each region and locality to vie for attention separately.

Promote trust, provide for meaningful public participation, and ensure environmental justice consistent with State law.

20. Promote trust among the state, regional governments, interested parties, and stakeholders with respect to the development and implementation of the Goods Movement Action Plan. Trust among stakeholders must be earned and nurtured through constant communication and demonstration that their views and needs are being considered.

21. Solicit and consider public input, including input from communities, before making goods movement and related public health and environmental/ community mitigation decisions. Local communities should be engaged early in the design process to enable the community to participate in that process in a meaningful way.

22. Ensure fair treatment of people of all races, cultures, and incomes with respect to the development and implementation of the Goods Movement Action Plan. To ensure fair treatment of all residents in impacted communities, proactive efforts must be undertaken to engage the communities and consider and address community-specific impacts.

B. Criteria for Selection of Projects and Actions

Evaluation criteria help determine the relative merits of candidate projects and actions to achieve desired outcomes. Each of the supporting work groups were asked to identify criteria for projects or actions in the respective areas of goods movement infrastructure and operations, public health and environmental mitigation, community impact mitigation, and public safety and homeland security.

While projects can be identified in each area independently, there is more value in developing a portfolio of projects that are mutually reinforcing. This results because projects and actions can provide benefits in multiple areas. For example, grade

separation projects not only increase mobility and relieve traffic congestion but also enhance public safety through reduced accidents, and may improve air quality from reduced idling at rail crossings. For other types of infrastructure projects, specific public health and environmental or community impact mitigation actions might better achieve desired outcomes than stand-alone actions indicated by the criteria.

1. Criteria for Selection of Infrastructure Projects and Operational Improvements

Of all the areas, criteria for goods movement infrastructure and operation improvements are the most specific. This results because the logistics industry has long used three key measures to determine the state of a goods movement system: velocity, throughput, and reliability. These items are described below along with other criteria that should be considered. No single project will meet all the criteria, but those listed provide a means to evaluate a candidate project's value.

Improves Velocity

In an era of Just in Time (JIT) logistics, the speed at which goods are able to move across the system and arrive on the shelf is crucial. As a criterion for infrastructure improvements, *velocity* refers to this speed of goods delivery. As this plan will demonstrate, there are several means by which velocity in the goods movement system can be increased. Any prospective project should be evaluated on its ability to increase velocity.

Increases Throughput

Throughput is an indication of the volume of goods handled by the system. When considering California's seaports, throughput is considered in terms of the number of TEU passing through the port per year. One way to express throughput at sea ports is in terms of *throughput density. Throughput density* is the annual throughput divided by the size of the terminal.[35] Increasing throughput density can increase throughput without physically expanding the size of the port itself. Throughput density is affected in general terms by the following three parameters:[36] *Static Storage Capacity, Container Dwell Time and Net/Gross Area Ratio*. *Static storage capacity* is the number of containers, expressed in TEU that can be physically housed at the port at any given time. Expanding this capacity would contribute to an overall increase in throughput density. *Container dwell time* is the period of time that a container will remain in the port. Actions which shorten this time period would contribute to an overall increase in throughput density. Finally, the *Net/Gross Area Ratio* is the percentage of space at the port that is actually available for storage. "Some terminals have features like on-dock rail yards, break-bulk or RO/RO (roll-on, roll-off) handling,

[35] Sisson, Mark. U.S. CONTAINER TERMINAL THROUGHPUT DENSITY. A report by the JWD group. 2-12-03. Available online at http://www.portofhouston.com/pdf/genifo/POHA-BayportCapacity.pdf. Page 6
[36] Ibid.

container freight stations (CFS) or other structures that effectively reduce the net/gross ratio."[37] Actions that maximize net space available for cargo storage will increase the *Net/Gross Area Ratio*, thereby improving overall throughput at the port. Throughput should be considered on an integrated system-wide basis. Throughput as a criterion is relevant also to land entry points (border crossings) and in each of the four goods movement corridors.

Improves Reliability

The reliability of the goods movement system is another important piece of criterion. A proposed action should be evaluated in terms of its potential for increasing reliability. In other words, the project should be judged on its potential to decrease variance. To the logistics industry, the consistency of transportation times is just as valuable as the dimensions of velocity or throughput. Reliability considers all modes of the goods movement industry. Unreliable infrastructure in one segment of the goods movement system will causes bottlenecks and adversely affects other links in the chain. System reliability is directly related to velocity and throughput capacity. Intuitively, increased reliability yields more stability in velocity and throughput.

Velocity, throughput, and reliability are generic criteria. Since each terminal is acting on their own business model, there is a limited extent to which these criteria can be applied. Several operational variables such as transshipping or the choice of container stacking versus wheeled storage can impact velocity, throughput, and reliability. What fits for one terminal may not be a fit for the entire port. Furthermore, as goods leave the ports, they are subject to the limitations at other points in the system.

Reduces Congestion

Determining to what extent a project will reduce congestion for both goods movement and non-goods movement (i.e., commuter) traffic is another criterion for project evaluation. As a static system is burdened with an increasing volume of container flow, the natural consequence is increased congestion. General mobility is impacted by the goods movement industry. Increased truck traffic on streets and highways, as well as increased rail trips through non-grade crossings, are directly related to decreased mobility and increased congestion. Projects that reduce congestion not only improve velocity, throughput, and reliability, they improve Californians' quality of life. Reduced congestion can also positively affect public health and the environment. Stop and go traffic generates more

[37] Ibid.

emissions than free flowing traffic[38] and vehicles tend to release more emissions at extremely low speeds or when rapidly accelerating.[39]

Reduces Impact on the Community

Among the range of infrastructure projects, some provide relief of previous community impacts because of reconfigurations of land use or other inherent design elements. Projects such as grade separations reduce noise as trains do not have to sound horns at grade crossings.

Increases Connectivity

Projects should be evaluated as to their potential to increase connectivity across the goods movement system. As goods move from one mode to another (intermodal) there will be variations in velocity and throughput. Better connectivity lends itself to increased reliability, velocity, and throughput system-wide.

Considers Innovative Technology

The extent to which projects consider innovative technologies can be a criterion for evaluation. Technology is constantly evolving and projects should be evaluated on the extent to which they consider such innovation. Projects should be long-lasting improvements and should consider the most promising and the most feasible technological advances.

Improves Energy Efficiency

Projects should be evaluated as to their effect on the aggregate energy/fuel consumption across a transportation network. Infrastructure projects that reduce congestion and minimize fluctuations in velocity would impact the energy efficiency of freight movement and non-freight traffic, thus achieving a wider spectrum of energy efficiency.

Leverages Federal, Local or Private Funding

The extent to which a proposed project has identified and committed supplemental non-State funds should be considered in the selection process. Those projects which demonstrate a higher level of federal, local, or private supplemental funding should be given emphasis.

[38] Southern California Association of Governments (SCAG). Traffic Congestion and Air Quality. Fall 2005
[39] Federal Highway Administration. A Sampling of Emissions Analysis Techniques for Transportation Control Measures. Prepared by Cambridge Systematics, Inc. Excerpt from section on "Forecasting Approaches." Available online at http://www.fhwa.dot.gov/environment/cmaqeat/index.htm

2. Criteria for Selection of Public Health and Environmental Impact Mitigation Actions

Following is a list of criteria for evaluating public health and environmental mitigation actions related to goods movement activities. Which criteria are appropriate in evaluating a particular action will depend on the nature of the action (e.g., regulation of a fuel) and the type of action (e.g., regulation, incentive program, voluntary agreement, etc.) For example, air quality measures that will become part of the State Implementation Plan pursuant to the Federal Clean Air Act are subject to specific legal requirements. Incentive programs may be subject to other requirements. In general, the criteria below are helpful in evaluating whether a public health and environmental mitigation action should be selected for reducing public health impacts and environmental impacts associated with goods movement.

- Addresses threat to public health (exposure weighted).
- Reduces emissions or discharges/runoff.
- Provides immediacy of reductions (or significant reductions for approaches that take longer).
- Provides long-term reductions.
- Demonstrates technology feasibility.
- Takes advantage of technological developments.
- Promotes alternate fuel use that achieves emission reductions and promotes fuel diversity.
- Delivers cost-effective results relative to alternative action (e.g., measured by $/ton reduced and/or $/lives saved).
- Demonstrates enforceability.

3. Criteria for Selection of Community Impact Mitigation and Workforce Development Actions

Following is a list of criteria for community impact mitigation actions and workforce development actions related to goods movement activities.

Community Impact Mitigation

- Accommodates community preferences.
- Secures community buy-in.
- Achieves “like for like” mitigation for impacts related to public health (e.g., air pollutant emission reductions to mitigate impacts due to air pollution – not the construction of a community center to mitigate impacts due to air pollution).
- Optimizes number of residents served and/or benefiting from mitigation action.
- Demonstrates feasibility.
- Fits with available funding.

- Carries potential for multiple benefits (e.g., noise reduction and pollution exposure reduction).
- Achieves partial or full mitigation.
- Delivers accountability for follow-through.
- Considers noise and light impacts and implements noise and/or light mitigation where needed.
- Considers environmental justice (i.e., fair treatment of people of all races, cultures, and incomes with respect to implementation of the Goods Movement Action Plan).

Workforce Development Actions

- Educates/trains the workforce.
- Creates jobs in the local community.
- Develops partnerships with secondary and higher education.
- Leverages existing resources.
- Incorporates aggressive outreach to industry and community.

4. Criteria for Selection of Public Safety and Security Actions

Establishing criteria for the selection of public safety and security actions is deceptively simple. One might conclude that the criteria state: "the action increases public safety and security." Defining the "increases" portion of that criterion is where a more in-depth analysis must be employed. The following criteria will aid in the selection and prioritization of public safety and security actions:

- Reinforces or compliments federal, State, and local public safety efforts.
- Does not deteriorate goods movement system performance.
- Increases likelihood of intercepting suspicious or problem containers.
- Enhances landside domain awareness and control.
- Enhances seaside domain awareness and control.
- Extends virtual security perimeter.

C. Metrics for Evaluation after Implementation

The Phase II Goods Movement Action Plan is outcome oriented. Actions are evaluated by the extent to which they achieve the objectives and goals laid out in the Phase I Goods Movement Action Plan. A metric is a standard or unit of measure. Metrics are the means by which outcomes are measured. The metrics and benchmarks in this section of the report are categorized by infrastructure, public health and environmental mitigation, public health, community impact mitigation and public safety/security.

1. Metrics for Infrastructure Projects and Operational Improvements

Velocity and Throughput

The general metric for velocity is distance traveled per unit of time. An infrastructure project should be measured on its ability to maximize distance or minimize time. The velocity increase offered by any single infrastructure project is subordinate to the velocity across the entire intermodal supply chain. Put differently, it is counterproductive to consider increased velocity at one point if a bottleneck is shifted to another point in the system.

The general metric for throughput is the volume of goods passing a given point in a given period. An infrastructure project that expands the overall system capacity will thereby increase throughput. As with velocity metrics, it is imperative to weigh system-wide throughput resulting from a single project's implementation.

The shipping industry has developed several widely-accepted and readily available performance metrics. It is for that reason only that the majority of metrics listed below relate to ports. The development and identification of multimodal metrics is an ongoing process. Following are examples of multimodal velocity and throughput metrics:

- Average transit time (multimodal)
- Truck turn times inside terminals (sea ports and trucks)
- Average container dwell time (sea ports)
- Ratio of on dock rail vs. truck loading (sea ports)
- TEU by time of day (sea ports)
- TEU per quay length (sea ports)
- Average processing time for inspected containers (sea and land ports of entry)
- Number of ships waiting for berth (sea ports)
- Number of trucks waiting for primary inspection module (land ports of entry)
- TEUs per acre per year (sea ports)
- Total TEU capacity (sea ports)
- TEUs/Year (sea ports)
- Container movements per hour (sea ports)
- Crane lifts per hour (sea ports)
- Terminal gate moves (sea ports)
- Return time of equipment such as containers and chassis (sea ports)
- Average terminal dwell time (rail)
- Intermodal cars on line (rail)[40]
- Average train speed (rail)[41]
- Turns per shift - on and off peak (trucks)
- Street and highway capacity (trucks)

[40] National Retail Federation. *Port Tracker: Monthly Port and Intermodal Outlook*. August 2005
[41] US Surface Transportation Board (STB) Railroad Performance Measures.

Reliability

The general metric for reliability can be considered as the variation in velocity or throughput. An infrastructure project can be evaluated on a metric of reliability to quantify its impact on system variations in velocity and throughput. Consider the analogy of a dartboard where darts represent measurements of throughput and velocity, and the bull's-eye represents the highest benchmark of velocity or throughput. In one scenario, the average distance of all darts from the bull's-eye may be fairly close. However, there are a significant number of outliers, making prediction of the next throw more difficult. In another scenario, the average distance of all darts may be slightly farther from the bull's-eye but they are clustered and there is little difference in placement from one dart to another. The second scenario offers the distinct advantage of increased accuracy in predicting the next throw. In the goods movement system, reliability is useful to all players in regard to the predictability of future velocity and throughput performance. Some examples of such reliability metrics are:

- Variance in trip time
- Customs availability at sea ports[42] and land port of entry
- Equipment constraints[43]
- Berth availability[44]
- Pilotage[45]
- Towage[46]
- Other ship waiting time[47]

Congestion Reduction

Measuring the extent to which an infrastructure project reduces congestion can be expressed in terms of daily vehicle hours of delay (DVHD). DVHD is a measurement of congestion that represents speeds of 35 miles per hour or less lasting 15 minutes or longer.

[42] Barber, Daniel and Lisa Grobar. *Implementing a Statewide Goods Movement Strategy and Performance Measurement of Goods Movement in California*. A report for the METRANS Transportation Center. June 29, 2001. Page 13. Definition: the average variation in length of time in which cargo containers clear customs.
[43] Ibid. Definition: how often equipment (chassis) is rejected by truckers, delaying departure of containers from the port.
[44] Hamilton, Clive. Measuring Port Productivity: The Australian Experience. *An invited paper to the Conference in Container Port and Terminal Performance in the Intermodal Chain*. February 3-4, 1999. Page 6. Definition: the proportion of ship arrivals where a berth is available within four hours of the scheduled berthing time.
[45] Ibid. Definition: the proportion of ship movements where pilot service is available within one hour of the confirmed ship arrival/departure time.
[46] Ibid. Definition: the proportion of ship movements where towing service is available within one hour of the confirmed ship arrival departure time.
[47] Ibid. Definition: the proportion of ship movements affected by factors other than the unavailability of a berth, pilot, or towage causing a delay of an hour or more.

- Daily vehicle hours of delay (DVHD)

Energy Efficiency

Measuring the extent to which an infrastructure project has an effect on the aggregate energy/fuel consumption across a transportation network would require complex modeling and analysis. Infrastructure projects that reduce congestion and minimize fluctuations in velocity would impact the energy efficiency of freight movement and non-freight traffic, thus achieving a wider spectrum of energy efficiency. A simple metric of this net effect could be expressed in terms of:

- Change in system-wide aggregate fuel/energy consumption

2. Metrics for Public Health and Environmental Impact Mitigation

- Total tons of emissions reduced (NOx, PM, SOx, sulfate, VOC)
- Percent of mortality risk reduced
- Percent of cancer risk reduced
- Ambient pollution measurements within affected communities and in the region

3. Metrics for Community Impact Mitigation and Workforce Development

- Responsible agency/entity identified
- Funding committed
- Project initiated
- Project completed
- Number of persons newly employed in goods movement industry
- Number of persons trained to enter goods movement industry
- Number of incumbent employees promoted in the goods movement industry
- Number and type of mitigation actions accomplished by milestone years (e.g., 2010, 2015, 2020)

4. Metrics for Public Safety and Security

- Rate of commercial truck-involved collisions per ton mile
- Rate of injuries/fatalities in commercial truck-involved collisions
- Average property damage in commercial truck-involved collisions
- Number of commercial truck breakdowns per ton mile
- Train accidents per million train-miles[48]
- Average customs/safety inspection times
- Percentage of point of origin cargo inspected

[48] U.S. Department of Transportation. Federal Railroad Administration. *Federal Railroad Administration Action Plan for Addressing Critical Railroad Safety Issues*. May 16, 2005

- Existence of port recovery/continuity of operations plan
- Permeability of landside/seaside domain

D. Benchmarks for Evaluation after Implementation

1. Benchmarks for Infrastructure Projects and Operational Improvements

Benchmarking is "the process of comparing and measuring an organization's own performance on a particular process against the performance of organizations judged to be the best of a comparable industry." [49] However, identifying metrics and benchmarks for the goods movement industry is a challenging and radical undertaking that will surely require further study and discussion. In fact, a recent Waterfront Coalition whitepaper states: "To our knowledge, the marine terminal industry and the nation's port authorities have not developed any kind of common metrics that provide a true assessment of current capacity. Without this measure, the government, and industry are in effect 'flying blind' in terms of knowing how much additional volume of imports and exports can be managed . . ."[50] The material related to benchmarking presented in this framework for action will be subject to further scrutiny and investigation.

Market Share

On the macro level, it is important to evaluate all infrastructure projects in terms of their impact on market share. Market share can be considered a metric of California's national and international competitiveness. The economic advantages associated with the goods movement industry (as noted in the *Phase I Action Plan*) are crucial to California's rank as the eighth largest economy in the world. Identifying benchmarks in throughput is the key to understanding California's market share of the North American goods movement industry.

Velocity and Throughput

Generally, benchmarks are set by the best performers in the industry. In the case of goods movement, it is useful to identify throughput and velocity benchmarks as the levels of productivity at international ports (Table III-3) and other North American ports (Table III-2). In other words, where do California's ports rank in velocity and throughput worldwide? To begin answering this question, one should identify

[49] The Performance Based Management Handbook. Vol 2. 1993 Published by the Performance Based Management Special Interest Group (PBM SIG). Page A-2. PBM SIG is a U.S. Department of Energy (DOE) and DOE contractor funded organization. Available online via the Oak Ridge University website. http://www.orau.gov/pbm

[50] Waterfront Coalition. National Marine Container Transportation System: A Call to Action. May 2005. Page 11 *The Waterfront Coalition is a group of concerned business interests representing shippers, transportation providers, and others in the transportation supply chain committed to educate policy makers and the public about the economic importance of U.S. ports and foreign trade, and to promote the most efficient and technologically advanced ports for the twenty-first century*.- from mission statement

California's current performance (Table III-1). Then as indicated in the following tables, identify some benchmarks set by other ports. Performance can be evaluated as a relative improvement (percentage change) in current velocity and throughput. However, it should be noted that throughput and velocity are linked to many independent variables. For instance, South-East Asian ports conduct a great deal of "transshipping" or container transfer from one sea vessel to another. This factor significantly increases measurements of throughput and velocity because a larger share of containers spends very little if any time on the dock. Perhaps the most valuable use of a throughput benchmark is to gauge market share. For example, in 2004 the market share of California's major ports (as a percentage of total continental US port TEU throughput) was approximately 45 percent. [51]

Moves per Hour

A useful benchmark for understanding comparative throughput and velocity at the seaports is moves per crane per hour. This is a widely used measure of terminal productivity and can be helpful in benchmarking the performance at California's seaports to that of other world class seaports. Los Angeles and Long Beach operate with approximately 28 to 35 moves per crane per hour.[52] Several factors can limit this measure of productivity such as labor, safety regulations, and equipment capacity.

[51] American Association of Port Authorities

[52] Murphy, Melissa and Hanh Dam Le-Griffin. *Container Terminal Productivity: Experiences at The Ports of Los Angeles and Long Beach*. Paper delivered at the National Urban Freight Conference. February 2006. Available online at http://www.metrans.org/nuf/documents/Le-Murphy.pdf

Table IV-1: California Ports

California Port Throughput[53]	
California's Major Container Ports	*TEUs/Year in **2005** (TEUs, 000s)*
Port of Los Angeles	7,485
Port of Long Beach	6,710
Port of Oakland	2,273
Port of San Diego	102

Table IV-2: Top North American Ports

North American Port Throughput Benchmarks[54]	
North American Container Ports	*TEUs/Year in 2005 (TEUs, 000s)*
Los Angeles	7,485
Long Beach	6,710
New York/New Jersey	4,793
Port of Oakland	2,273
Seattle (WA)	2,088
Tacoma (WA)	2,066
Charleston (SC)	1,987
Hampton Roads (VA)	1,982
Savannah (GA)	1,902
Vancouver (BC)	1,767

Table IV-3: Top International Ports

International Port Throughput Benchmarks[55]	
Top World Container Ports	*TEUs/Year in 2005 (TEUs, 000s)*
1. Singapore	23,192
2. Hong Kong	22,602
3. Shanghai	18,000
4. Shenzhen	16,200
Los Angeles/Long Beach combined	14,195
5. Busan	11,840
6. Kaohsiung	9,470
7. Rotterdam	9,287
8. Hamburg	8,088
9. Dubai	7,620
10. Los Angeles	7,485
11. Long Beach	6,710
12. Long Beach	5,780

[53] American Association of Port Authorities *North American Port Container Traffic 2005, May 8, 2006* (unless otherwise noted)
[54] Ibid.
[55] American Association of Port Authorities and individual port websites (unless otherwise noted)

Reliability

Benchmarks for reliability are difficult to quantify. The highest achievable benchmark would be zero variance or 100 percent consistency. Establishing reliability benchmarks for goods movement requires further study and analysis.

2. Benchmarks for Public Health and Environmental Impact Mitigation

For public health and environmental mitigation actions, the best progress that can be achieved by a particular action is a moving target. New technologies, new fuels, and new means of retrofits are constantly being developed. The benchmarks (in the form of standards or requirements) are set by the regulating agency based on the facts at the time of the regulatory action.

3. Benchmarks for Community Impact Mitigation and Workforce Development

Community impact mitigation actions by their very nature will be specific to a specific community because the impacts vary from one community to another community. The best possible outcome for one community may not be the best possible outcome for another community. The metrics suggested above for community impact mitigation actions allow for evaluation of actions.

4. Benchmarks for Public Safety and Security

Developing these benchmarks is a task that will require further investigation, expert consultation, and extensive research. In her testimony before the U.S Senate Committee on Commerce, Science and Transportation, Margaret T. Wrightson noted that ". . . seaport security efforts, like homeland security efforts in general, lack measurable goals, as well as performance measures to measure progress toward those goals."[56] Establishing actual goods movement public safety and homeland security benchmarks will be an ongoing process.

[56] United States Government Accountability Office (GAO). Testimony Before the Committee on Commerce, Science, and Transportation, U. S. Senate. *MARITIME SECURITY: Enhancements Made,But Implementation and Sustainability Remain Key Challenges.* Statement of Margaret T. Wrightson, Director, Homeland Security and Justice Issues for the GAO.

V. PRELIMINARY CANDIDATE ACTIONS AND SOLUTION SETS

A. Background

The Goods Movement Action Plan Phase I Foundations report identified the "why" and the "what" of the State's involvement in goods movement. In so doing, it proffered a wide inventory of infrastructure projects and a preliminary discussion of mechanisms to reduce emissions from goods movement sources within the State's four goods movement corridors. The un-prioritized list of infrastructure projects amounted to approximately $47 billion in infrastructure investment. The report also estimated a cumulative cost of $2-$5 billion for air emission related mitigation actions. (ARB's updated estimate in the Emission Reduction Plan for Ports and Goods Movement in California (April 2006) is $6-$10 billion.) Also catalogued were prospective operational changes aimed at improving goods movement flow and mitigating its negative impacts.

To distill the wide range of projects and prospective actions into a strategic, comprehensive, and feasible set of recommendations, stakeholder input and public comment were solicited through a series of meetings, forums, and requests for comments. Based on the guiding principles and criteria developed by the stakeholder workgroups, preliminary candidate actions were identified. While the collective candidate projects and actions describe a full range of activities by corridor, mode, and timeframe, the array requires a unifying theme for policymakers as to how best to prioritize activities.

To provide that unifying theme, BTH and Cal/EPA developed the concept of "solution sets." In this process, sets of independent yet interlinked preliminary candidate projects and activities are grouped to provide a starting point for the selection of infrastructure projects and activities. The intent of the solution sets is to identify the preliminary candidate infrastructure projects that could break the logjam of obstacles so that needed outcomes for system improvements, associated emission reductions, and congestion relief can be realized as soon as possible. (As noted in Chapter III, ARB is already implementing its Emission Reduction Plan for Ports and Goods Movement in California.)

B. Preliminary Candidate Actions

Based on the efforts of the Infrastructure Work Group, BTH and Caltrans reviewed the list initial inventory of infrastructure projects and actions from the Phase I report against the infrastructure project criteria. That review distilled the approximately $47 billion list of infrastructure projects identified in Phase I to a $15 billion preliminary working list of projects (see Appendix C). The Infrastructure Work Group also reviewed and suggested a series of improvements for ship, port, rail, and truck operations to improve performance and better utilize existing assets.

Similarly, the Public Health and Environmental Impact Mitigation Work Group reviewed and provided ARB with comments regarding the emission reduction strategies proposed in the draft ARB Emission Reduction Plan. ARB considered that input in the

development and finalization of its Emission Reduction Plan for Ports and Goods Movement (April 2006). Staff of the State Water Resources Control Board developed Preliminary Candidate Actions for water pollution related to goods movement. The Department of Toxic Substances Control developed preliminary candidate actions related to site remediation. The Community Impact Mitigation and Workforce Development Work Group provided recommendations for the community impact mitigation actions. Likewise, the Homeland Security and Public Safety Work Group provided input for the listing of preliminary candidate actions related to security and public safety.

The Integrating Work Group and the public provided input to BTH and Cal/EPA regarding drafts of the Preliminary Candidate Action list. After consideration of this input, this process yielded a set of approximately 200 preliminary candidate actions for the four goods movement corridors among four categories and four time frames. The four categories are:

- Infrastructure projects and operations.
- Public health and environmental impact mitigation.
- Community impact mitigation and workforce development.
- Homeland security and public safety.

Within the Infrastructure Projects and Operations category, actions are grouped by mode: ship, port, rail truck, and other. Within the Public Health and Environmental Impact Mitigation – Air Quality category, actions are grouped by emission source: ship, locomotive, truck, cargo handling equipment, and commercial harbor craft. Within the Community Impact and Workforce Development category, actions are grouped by subject category: strategies, public participation, land use planning and workforce development.

The timeframes reflect the soonest implementation potential for each of the actions.[57] These periods are defined as:

- Immediate (immediate implementation, generally operational improvements)
- Short-term (0-3 years)
- Intermediate-term (4-10 years)
- Long-term (10+ years)

Table V-1 summarizes these preliminary candidate actions among the four goods movement corridors. A breakdown of candidate actions by corridor is presented in Appendix C. It is important to note that these candidate actions will require more rigorous analysis pursuant to the evaluation criteria relative to the specific goods movement corridor and statewide benefits that are expected to be achieved. Similarly, project-by-project environmental impact review as required by the California Environmental Quality Act must be conducted and required mitigation must be

[57] The preliminary candidate infrastructure projects in Appendix C are delineated by a slightly different time frame as follows: Short 1-5 years; Intermediate 6-10 years; and Long 11-20 years.

implemented. It is expected that project proponents demonstrate the benefits of the respective projects and that costs of required mitigation are defined and included and funded as part of overall project funding requirements.

TABLE V-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Infrastructure and Operations	<u>Operational Improvements</u> **Ships** ➢ Spread out vessel sailings and arrivals in the trans-Pacific trade. ➢ Evaluate short- sea shipping – including environmental impacts. ➢ Increase "destination loading" on ships from the Far East. ➢ Finalize ARB ship auxiliary engine rule (OAL review). **Ports** ➢ Operate PierPass port extended gate hours program. ➢ Implement PierPass drayage truck fleet emission reduction program. ➢ Expand labor force at the ports. ➢ Improve labor work rule flexibility to enable increased daily truck turns. ➢ Implement virtual container yards. ➢ Implement incentives to limit container dwell time. ➢ Finalize ARB intermodal cargo equipment rule (OAL). **Rail** ➢ Evaluate shuttle train pilot project performance. ➢ Utilize more rail for long haul. ➢ Finalize ARB intermodal cargo equipment rule (OAL). **Trucks** ➢ Develop regional or national chassis pools. ➢ Implement port-wide terminal appointment systems for truckers. **Other** ➢ Employ better trade and transportation forecasting. ➢ Improve communications of fluctuating demand forecasts for labor and equipment among carriers, railroads, and terminal operators. ➢ Develop comprehensive goods movement data collection methodologies, modeling, and data evaluation. ➢ Enact public-private partnership legislation. ➢ Enact design-build and design sequencing legislation.	<u>Infrastructure Projects</u> ➢ State Route 47, Alameda Corridor Expressway (includes Schuyler Heim Bridge replacement). ➢ I-710 Early Action Project: Port Terminus Improvements. ➢ Port of Long Beach Gerald Desmond Bridge Replacement. ➢ Alameda Corridor East Grade Separations.* ➢ BNSF/UP, Los Angeles Basin Rail Capacity Improvements.* ➢ BNSF/UP Colton Crossing Rail Grade Separation.* ➢ Port of Oakland 7th Street/Union Pacific Grade Separation Reconstruction. ➢ Port of Oakland Outer Harbor Intermodal Terminal. ➢ Union Pacific Railroad Martinez Subdivision, Oakland to Martinez, Capacity Improvement Project. ➢ I-880 23rd and 29th Avenue Interchanges, Operational improvements. ➢ Altamont Pass Rail Corridor/Central Valley Rail Freight Shuttle Demonstration Project. ➢ State Route 905 Six-Lane Freeway (Mexico border/Otay Mesa port of entry to Interstate 805). ➢ Port of San Diego National City Marine Terminal Operational Improvements. ➢ BNSF Tehachapi Pass Double Track, Tunnels Modification. ➢ UP Central Corridor Double Track, Tunnels Modification.	<u>Infrastructure Projects</u> ➢ Alameda Corridor East Grade Separations.* ➢ BNSF "Southern California International Gateway" Near Dock Intermodal Facility. ➢ Union Pacific Near Dock Intermodal Container Transfer Facility. ➢ BNSF/UP Los Angeles Basin Rail Capacity Improvements.* ➢ Interstate 5 Truck Lanes, SR 14 to Calgrove Blvd. ➢ BNSF/UP Colton Crossing Rail Grade Separation. ➢ I-80 Cordelia Truck Scales. ➢ State Route 4 Extension to the Port of Stockton. ➢ I-580 Westbound Truck Climbing Lanes. ➢ I-580 Eastbound Truck Climbing Lanes. ➢ Otay Mesa East Border Crossing (new). ➢ State Route 11,State Route 905 to Otay Mesa East Border Crossing.	<u>Infrastructure Projects</u> ➢ Alameda Corridor East Grade Separations* ➢ BNSF/UP Los Angeles Basin Rail Capacity Improvements.*

* These infrastructure projects appear in more than one time frame due to the complexity and/or scope of the specific project(s).

TABLE V-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

		Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Health and Environmental Mitigation – Air Quality	Ships	➢ Support ratification of MARPOL Annex 6 for international shipping. ➢ Implement vessel speed reduction MOU in Southern California. ➢ Finalize ARB ship auxiliary engine rule (i.e., Office of Administrative Law (OAL) review).	➢ Utilize lower sulfur fuel (0.5% by 2007) for marine auxiliary engines. ➢ Dedicate cleanest vessels to California service (ongoing). ➢ Increase use of cleaner fuels in ships through voluntary or regulatory mechanisms (ongoing). ➢ Increase use of shore power or alternatives for ships through voluntary or regulatory mechanisms (ongoing). ➢ Expand vessel speed reduction program.	➢ Utilize lower sulfur fuel (0.1% by 2010) for ship auxiliary engines. ➢ Obtain Sulfur Emission Control Area (SECA) designation or alternative. ➢ Retrofit existing main engines on ships during major maintenance (ongoing). ➢ Install emission controls on ship main/auxiliary engines of frequent flyers (ongoing). ➢ Continue ongoing strategies.	➢ Continue ongoing strategies.
	Locomotives	➢ Utilize CA low sulfur diesel for captive instate locomotives. ➢ Implement 1998 Railroad MOU for South Coast Air Basin. ➢ Implement 2005 Statewide MOU for Rail Yard Risk Reduction. ➢ Conduct ARB training on locomotive idling restrictions.	➢ Upgrade engines in switcher locomotives by 2010. ➢ Retrofit existing locomotive engines with diesel PM controls. ➢ Use cleaner fuels in locomotives, particularly for captive fleets and/or new facilities.	➢ Implement Tier 3 US standards for line haul locomotives (new engine and rebuild standards). ➢ Implement US low sulfur fuel for interstate locomotives. ➢ Concentrate Tier 3 locomotives in California (ongoing).	➢ Continue ongoing strategies.
	Trucks	➢ Utilize CA low sulfur diesel for trucks. ➢ Conduct smoke inspections for trucks in communities. ➢ Enforce 5 minute idling limit for trucks. ➢ Accelerate software upgrade for trucks. ➢ Implement incentives for cleaner trucks.	➢ Adopt and implement ARB rule to modernize (replace and/or retrofit) private truck fleets (ongoing). ➢ Modernize (replace and/or retrofit) port trucks (ongoing). ➢ Implement CA/US 2007 truck emission standards. ➢ Adopt and implement ARB rule to require international trucks to meet US emission standards. ➢ Enforce CA rule for transport refrigeration units on trucks, trains, ships. ➢ Enhance enforcement of truck idling limits.	➢ Restrict entry of trucks new to port service unless equipped with diesel PM controls. ➢ Continue ongoing strategies.	➢ Continue ongoing strategies.

TABLE V-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

		Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Health and Environmental Mitigation – Air Quality, Continued	Cargo Handling Equipment	➢ Utilize CA low sulfur diesel for equipment. ➢ Finalize ARB intermodal cargo equipment rule (i.e., OAL review). ➢ Implement State incentives for cleaner fuels at Ports of Los Angeles and Long Beach.	➢ Implement ARB rule for cleaner cargo handling equipment through replacement, retrofit, or alternative fuels (ongoing). ➢ Adopt and implement ARB fork lift rule for gas-fired equipment (ongoing). ➢ Require green equipment for goods movement related construction and maintenance.	➢ Implement CA/US Tier 4 equipment emission standards. ➢ Upgrade cargo handling equipment to 85% diesel PM control or better. ➢ Continue ongoing strategies.	➢ Increase penetration of zero emission or near zero emission cargo handling equipment. ➢ Continue ongoing strategies.
	Commercial Harbor Craft	➢ Implement incentives for cleaner harbor craft.	➢ Adopt tighter USEPA or ARB emission standards for harbor craft. ➢ Utilize CA low sulfur diesel for harbor craft. ➢ Clean up harbor craft through replacement, retrofit, or alternative fuels (ongoing). ➢ Use shore power for harbor craft at dock.	➢ Implement new USEPA or ARB engine standards for harbor craft. ➢ Implement incentives to accelerate introduction of new harbor craft engines. ➢ Continue ongoing strategies.	➢ Continue ongoing strategies.

TABLE V-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Health and Environmental Mitigation – Water Quality	➢ Apply thoroughly and enforce existing water quality requirements (e.g., permits, certifications, etc.) on projects, and treat complaints, tips and violations (noncompliance with requirements) as a high priority – particularly at port operations areas, truck traffic idling areas, and upland disposal areas of any dredged materials. ➢ Identify waste load allocations (pollutant level targets, in terms of mass discharge allowed) for port-area water bodies currently listed as impaired [pursuant to Clean Water Act section 303(d)]. ➢ Review current ballast water exchange practices and identify opportunities to further mitigate exotic species introduction. ➢ Initiate studies to better understand relationship between airborne emissions in port areas and water quality and beneficial use impacts. ➢ Initiate studies to identify community impacts from project-related activities with regards to water quality and beneficial use of the waters (with special attention to potential environmental justice impacts and subsistence consumption and recreational uses). ➢ Identify sources of marine debris discharges in port areas and begin to eliminate them. ➢ Implement better land planning practices that employ the key principles of Low Impact Development (LID). For example: use site hydrology as the organizing principle for all others. o Match the initial abstraction and mimic natural water balance. o Employ a uniform, strategic distribution of small-scale controls. o Decentralize controls and disconnect impervious surfaces. o Minimize land disturbance and connected, impervious cover. o Incorporate natural site elements into design.	➢ Establish redundant systems to eliminate or reduce discharges of marine debris and other pollutants causing impairments. ➢ Establish performance measures to measure effectiveness of mitigation activities and overall mission to protect enhance and restore beneficial uses of waters in project areas. ➢ Continue to thoroughly apply and enforce existing water quality requirements (e.g., permits, certifications, etc.) on projects, and treat complaints, tips and violations (noncompliance with requirements) as a high priority – particularly at port operations areas, truck traffic idling areas, and upland disposal areas of any dredged materials. ➢ Apply waste load allocations (pollutant level targets, in terms of mass discharge allowed) for port-area water bodies approved and in force. ➢ Continue to identify waste load allocations (pollutant level targets, in terms of mass discharge allowed) for port-area water bodies currently listed as impaired [pursuant to Clean Water Act section 303(d)]. ➢ Implement better ballast water exchange practices and identify opportunities to reduce and further mitigate exotic species introduction. ➢ Implement recommendations from studies to reduce water quality and beneficial use impacts from airborne emissions in port areas. ➢ Implement recommendations from studies to enhance and restore water quality and beneficial use of the waters (with special attention to potential environmental justice impacts and subsistence consumption and recreational uses) in communities surrounding projects. ➢ Continue to implement better land planning practices that employ the key principles of Low Impact Development (LID).	➢ Monitor performance of systems employed and practices implemented in previous terms and revise plans or practices as needed. ➢ Ongoing implementation of short-term actions.	➢ Ongoing implementation of intermediate actions.

TABLE V-1 PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS				
	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Health and Environmental Mitigation – Hazardous Waste Management	➢ Develop a statewide Hazardous Waste and Contaminated Media Management Plan for goods movement-related infrastructure projects to ensure the integrated, safe management of hazardous wastes and substances encountered during project design and construction. ➢ Account for the costs of any required management of contaminated soils, mitigation of other hazardous substances contamination, and oversight of compliance with related regulatory requirements in the planning and execution of infrastructure projects. ➢ Design infrastructure projects with an effort to minimize exposure to hazardous substances and to manage hazardous substances to minimize public health and environmental impacts of any removal, transportation, treatment, and onsite management. ➢ Ensure that hazardous substances mitigation approaches (such as on-site management, deed restrictions, etc.) will remain protective of public health and the environment for the life of the infrastructure project and that operations and maintenance plans that provide for ongoing monitoring and inspection of any remedial systems or site controls are in place where appropriate.	➢ Develop project specific Hazardous Waste and Contaminated Media Management Plans to ensure the integrated, safe management of hazardous wastes and substances encountered during project design and construction.	➢ Ongoing implementation of immediate and short-term actions.	➢ Ongoing implementation of immediate and short-term actions.

TABLE V-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Community Impact Mitigation and Workforce Development	Note: The actions listed in the Public Health and Environmental Mitigation section will provide significant health benefits to communities adjacent to ports, rail yards, intermodal facilities, and highways. Additional general actions include: Strategies ➢ Enforce anti-idling rules. ➢ Reroute trucks. ➢ Conduct mitigation and pollution prevention. ➢ Develop community benefit agreements when desired by the community. ➢ Conduct targeted community assessments including monitoring as appropriate. ➢ Track emission reductions and estimated cancer risk reduction in communities. ➢ Preserve existing parks, open space, and natural areas. ➢ Coordinate with local city redevelopment departments to identify priority enhancement areas in adjacent communities. ➢ Develop and implement community enhancement projects. ➢ Emphasize landscaping and aesthetic improvements using local native plants. ➢ Increase enforcement of traffic and vehicle safety laws and regulations. ➢ Increase public and trucker education on safety and neighborhood issues. Public Participation ➢ Expand public outreach. ➢ Consult community members regarding infrastructure plans throughout the planning process. ➢ Establish Community Advisory Committee for the EIR /EIS stage of an infrastructure project (for projects that have not already gone through the environmental review process).	➢ Ongoing implementation of immediate actions. ➢ Use green equipment for construction of infrastructure projects (as available). ➢ Establish construction staging areas in locations to minimize impact on local circulation. ➢ Establish a community forum to address community concerns during construction. ➢ When considering operational changes to extend hours (including during construction), evaluate noise and light impacts on adjacent communities. ➢ Mitigate noise impacts in adjacent communities. ➢ Mitigate light impacts in adjacent communities. .	➢ Ongoing implementation of immediate and short-term actions.	➢ Ongoing implementation of immediate, short-term, intermediate-term and long-term actions.

TABLE V-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Community Impact Mitigation and Workforce Development, Continued	Public Participation, Continued ➢ Hold public meetings when members of the affected community can attend (e.g., in the evening). ➢ Include language translation where appropriate. ➢ Draw on knowledge and experience from the community. Land Use Planning ➢ Integrate port and city planning/promote use of buffer zones between ports and surrounding communities. Workforce Development ➢ Partner with the California Community Colleges Economic and Workforce Preparation Division, the California State University System and other institutions of higher learning, K-12, and employers to respond to the demand for qualified workers and continuous workforce improvement.	➢ Provide goods movement job training within affected communities. ➢ Develop industry driven and industry recognized certificate programs (and curriculum) in the areas of transportation, logistics support, warehousing and storage, supply chain management and safety and security. ➢ Provide logistics (goods movement) training to incumbent workers to enhance productivity and create higher skilled higher wage jobs in this sector. ➢ Placement of workers into logistics industry by creating awareness of job opportunities and preparing job seekers with employable traits as required by industry.	➢ Provide goods movement job training within affected communities. ➢ Continuously develop and offer for credit and not-for-credit logistics and goods movement curriculum. ➢ Replicate model across California.	➢ Provide goods movement job training within affected communities. ➢ Create an educational continuum by articulating curriculum from K-12 through graduate school to provide incumbent workers, employers, and job seekers with continuous educational opportunities.

TABLE V-1
PRELIMINARY CANDIDATE ACTIONS – SUMMARY FOR FOUR CORRIDORS

	Immediate Actions	Short-Term Actions (0-3 years)	Intermediate-Term Actions (4-10 years)	Long-Term Actions (more than 10 yrs)
Public Safety and Security	Operational Improvements, Evaluations and Studies ➢ Align CHP Foreign Export and Recovery (FEAR) efforts with Federal Homeland Security ➢ Establish a multi-jurisdictional Port Security Task Force ➢ Evaluate cross-sectoral vulnerability of ports (power, water, etc). ➢ Evaluate all truck and rail routes out of port districts and air basins to determine long term velocity, security, and environmental opportunities. ➢ Develop a Federal, State, and Local funding strategy. ➢ Evaluate the "Agile Port" concept for public safety/homeland security advantages. ➢ Use the NAFTA model to understand the public safety and security issues. ➢ Evaluate lane departure technology to identify driver fatigue and safety scoring of operators. ➢ Continue support and implementation of safety improvement programs. ➢ Increase enforcement of traffic and vehicle safety laws and regulations. ➢ Increase public and trucker education on safety and neighborhood issues. ➢ Urge US Coast Guard District Eleven Command to adopt the Automated Secure Vessel Tracking System (ASVTS) developed by the Maritime Information Services of North America (MISNA). ➢ Evaluate new freight transportation technologies (maglev, SAFE shuttle, etc.) for Homeland Security and public safety applications. ➢ Evaluate *Green Freight Corridor* road and rail infrastructure with integrated sensor network for Homeland Security and public safety applications.	➢ Construct commercial vehicle enforcement facilities around the LA/LB and Oakland ports to enhance highway safety and security. ➢ Establish a pilot test program using hazardous materials movement of containers and a short haul rail system that "flushes out" the containers in the ports and rail yards. ➢ Develop a pilot project for creating a physical communication grid in the corridor. ➢ Use intelligence and automated info to identify and target high-risk containers. ➢ Pre-screen high-risk containers at point of departure. ➢ Use new detection technology to quickly prescreen. ➢ Develop joint inspection stations in the port districts and at the border crossing. ➢ Develop community web portal to provide real or near real time information on goods movement and freight mobility conditions across road and rail network within the region. ➢ Clear U.S. Customs at inland destinations.	➢ Retrofit freight vehicles with probes and smart sensors to measure speed, weather, pollution, lane departure, cargo location, customs data, container RFID information, and vehicle/frame condition inspection dates. ➢ Use smarter, tamper-evident containers with RFID e-seals. ➢ Develop a container loading and unloading program (similar to CTPAT) that addresses homeland security issues like peaking for local California businesses.	➢ Develop a Green Freight Corridor (similar to Customs Green Lane) program and system. ➢ Install sensors and environmental monitoring equipment along corridor to communicate between operators, vehicles, containers and the command center. ➢ Establish three integrating centers for all data and system managements at the ports, Mexican border, and the Inland Empire using the Metrolink model. ➢ Provide data feeds from corridor system to County Emergency center, the Command and Control Center at Camp Pendleton, the CHP command centers, and NORTHCOM.

C. Solution Sets

While the approximately 200 Preliminary Candidate Actions summarized in Table V-1 present a convenient means to group potential actions, project or action selection and implementation are complicated by many constraints and limitations. Cost, funding adequacy, public acceptance, jurisdictional conflicts, and regulatory issues are just a few of the many factors that influence and retard the pace of needed progress. California's goods movement system covers a wide range of activities requiring complex interaction among equipment, infrastructure, and people. Each of the State's four goods movement corridors is comprised of a series of transport, sorting, and distribution functions that must operate seamlessly to maintain the overall performance, reliability, and competitiveness of the corridor.

Traditionally, those entities that own, operate, or control each of the corridor activities have made independent decisions regarding needed improvements or enhancements to their respective operation. While such a process has worked well in the past, the explosive growth of trade projected over the next two decades requires that decision makers consider project priorities and consequences relative to the entire goods movement system in California - not just their segment. It is important for decision makers to understand the magnitude of the issues among the corridors so that resources can be applied according to the greatest needs.

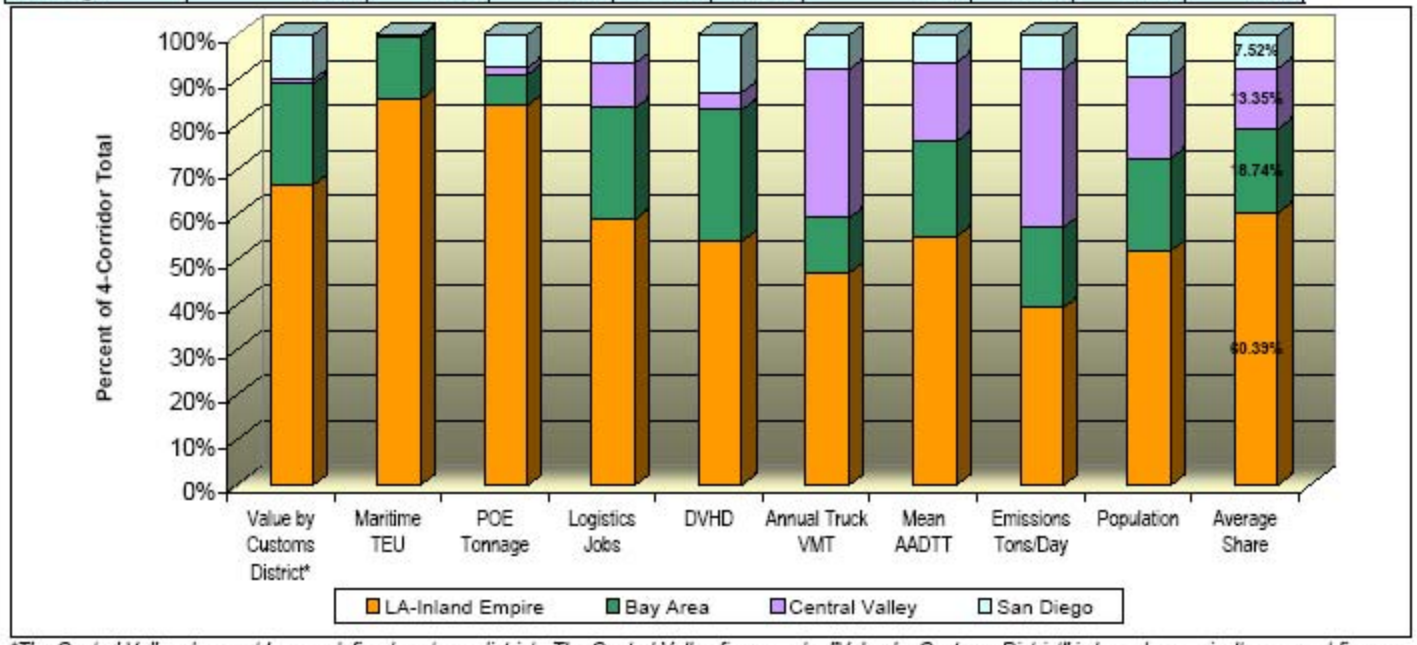
To help develop order of magnitude estimates of how effort should be distributed among the corridors, the agencies compiled a series of indices to compare and contrast key indicators among the corridors. Items included:

- Value by customs district
- Maritime container volume
- Port of Entry tonnage
- Logistics jobs
- Daily vehicle hours of delay
- Mean average annual daily truck volume
- Total emissions per day
- Population

While the relative fractions or contributions of each of these factors vary by corridor, an unweighted aggregate of the fractions indicate that the Los Angeles/Long Beach-Inland Empire corridor in southern California ranks first by a large margin with about 60 percent of the aggregate shares see Figure V-1). The Bay Area, Central Valley, and San Diego corridors represent 19 percent, 13 percent, and 8 percent respectively. More specific analysis will be necessary to determine the relative allocation of effort among the corridors to achieve simultaneous and continuous improvement.

Comparative Analysis of Several Indicators in the Four Goods Movement Corridors

Data Year	2005	2005	2005	2003	2002	2005	2004	2005	2006	
	Value by Customs District*	Maritime TEU	POE Tonnage	Logistics Jobs	DVHD	Annual Truck VMT	Mean AADTT	Emissions Tons/Day	Population	Average Share
LA-Inland Empire	$293,904,100,000	14,223,556	192,446,801	240,685	274,172	6,676,000,000	13,801	338.90	18,080,413	60.39%
Bay Area	$98,982,200,000	2,272,525	15,475,674	100,887	147,900	1,738,000,000	5,280	154.10	7,126,284	18.74%
Central Valley	$4,670,825,670	137	3,347,533	40,709	19,507	4,677,000,000	4,390	302.20	6,310,494	13.35%
San Diego	$43,432,500,000	101,509	16,730,365	25,726	64,595	1,089,000,000	1,542	66.00	3,233,405	7.52%
TOTALS	$440,989,625,670	16,597,727	228,000,374	408,007	506,174	14,180,000,000	25,013	861.20	34,750,596	100.00%
	%	%	%	%	%	%	%	%	%	
LA-Inland Empire	66.65%	85.70%	84.41%	58.99%	54.17%	47.08%	55.18%	39.35%	52.03%	
Bay Area	22.45%	13.69%	6.79%	24.73%	29.22%	12.26%	21.11%	17.89%	20.51%	
Central Valley	1.06%	0.00%	1.47%	9.98%	3.85%	32.98%	17.55%	35.09%	18.16%	
San Diego	9.85%	0.61%	7.34%	6.31%	12.76%	7.68%	6.17%	7.66%	9.30%	



**The Central Valley does not have a defined customs district. The Central Valley figure under "Value by Customs District" is based on agriculture export figures and a share estimate. In 2002, the Central Valley amounted to 57% of total CA agriculture exports. In 2005 CA agriculture exports totaled $8,194,431,000. Thus, a share estimate of 57% applied to $8,194,431,000 = $4,670,825,670.*

To provide a starting point for the selection of infrastructure projects and activities, BTH developed five sets of independent yet interlinked preliminary candidate projects and activities. These "solution sets" are:

- Truck emission reduction and congestion mitigation
- Truck port access improvements
- Rail mode increases
- Freight community mitigation improvements
- System throughput/velocity improvements

An additional advantage of grouping projects in this manner is that leveraging of dollars among modes is enhanced. For example, increasing intermodal capacity that reduces truck traffic increases the economic basis for expanding rail capacity improvements. As a consequence, the solution set process helps stimulate private sector investment that would otherwise be delayed until business conditions are deemed favorable.

The candidate actions grouped in Table V-2 for each of the four goods movement corridors are representative of the solutions sets described herein. It is important to note that the candidate actions listed in solution sets in Table V-2 will require more rigorous analysis pursuant to the evaluation criteria relative to the specific goods movement corridor and statewide benefits that are expected to be achieved. Similarly, project-by-project review as required by the California Environmental Quality Act must be conducted and required mitigation must be identified, and implemented. It is expected that project proponents demonstrate the benefits of the respective projects and that costs of required mitigation are defined, included and funded as part of overall project funding requirements.

Excluded from the solution set for goods movement are projects with independent funding. Under SAFETEA-LU, the Federal Coordinated Border Infrastructure Program was changed into a formula-driven program. Under the program, funds are provided to the states for the purpose of improving infrastructure to support the safe movement of motor vehicles at or across U.S. international borders. Eligible uses include infrastructure improvements, enforcement facilities, operational improvements, modifications to regulatory procedures, and binational coordination of transportation planning, programming, and border operations. Based on recent and expected federal apportionments, approximately $92 million is expected to be available to California. As proposed by Caltrans and agreed to by the California Transportation Commission at its November, 2006 meeting, $82 million will be committed to the development of the SR 905 Freeway project, and $10 million will be used as matching funds for other border-related improvements. In addition, under Proposition 1B, $1.0 billion has been set aside for improvements to the Central Valley's Route 99 (see Chapter VII, Section C).

As discussed in more detail below, some of the solution sets involve infrastructure improvements (i.e., construction projects). As noted in Chapter IV, a fundamental principle for this plan is that infrastructure and mitigation actions should be approached on a simultaneous and continuous improvement basis. Chapter V explains in detail how

this principle will be implemented. Implementation of this principle as specified in Chapter V includes:

- Implementation of the ARB new Emission Reduction Plan for Ports and Goods Movement (which is already ongoing and is independent of the solution sets)
- Verification and accountability provisions for air quality progress
- Project-by-project mitigation as required by the California Environmental Quality Act
- Community Advisory Committees
- Air Quality Monitoring

As noted in Chapter IV, part of approaching infrastructure and mitigation actions on a simultaneous and continuous basis is including the cost of required project-specific mitigation in the total cost of the project and funding the total cost of the project. Table V-2 is based on this principle. Chapter VII also includes related bond funding allocation recommendations to the California Transportation Commission.

1. Truck Emission Reduction And Congestion Mitigation

Addressing the environmental and community impacts from truck drayage (short trip) operations at and near the ports is one of the most challenging issues involving the goods movement supply chain. As a consequence of trucking deregulation in the early 1980s, competitive forces have compelled most trucking companies in the port drayage segment of the trucking industry to move to an independent owner operator business model and away from the traditional company-owned vehicle with company driver business model. Coupled with low entry barriers into the business, legitimate trucking companies face steep competition from firms that rely on undercapitalized independent owner drivers using old, polluting, unsafe trucks with inadequate insurance.

While shippers and consumers have benefited from low rates for drayage service, such savings are realized at the expense of the owner-operator who must often work long hours for low take-home pay. Similarly, because of the age and condition of the typical truck in the drayage fleet, residents in communities adjacent to major truck routes bear a disproportionate public health burden from excessive emissions from these vehicles. In addition, traffic congestion exacerbated by inefficient truck dispatching creates additional hazards and delay on city streets and highways.

All stakeholders agree that a solution must be found to provide opportunities for legitimate trucking companies and the independent owner-operators to recoup their costs and make an acceptable return on their investments, in order to achieve necessary performance improvements of trucks used in drayage service. A workable solution requires the simultaneous implementation of actions across the supply chain.

Actions that restrict access to the ports for dirty trucks will not by itself stimulate investment in newer trucks or investment in emission-reducing retrofits of older

trucks. Since drayage service is a low-margin business, investment in new or upgraded equipment is likely to lag demand until trucking companies and owner-operators are convinced that adequate revenue recovery is assured.

However, even as revenues increase, investment may still be problematic unless productivity increases as well. To achieve higher productivity, trucking companies and independent owner-operators will need expanded opportunities to increase the number of daily turns while at the same time reducing the number of wasted trips (i.e., non-revenue generating "bob-tail" trips). Current estimates are that more than 750,000 such trips occur annually.

Both industry and labor must contribute to the truck productivity solution. On the industry part, operational changes and investment must occur in the creation and expansion of virtual container yards, common chassis pools, and expansion of off-peak operations. Innovative financing and leasing arrangements that make it possible for independent owner-operators to upgrade their equipment will also benefit from industry participation. Similarly, opportunities exist for labor to take a leadership role to help address emission reductions and help resolve community issues and improve public health.. Finding ways to improve work rule flexibility so that truckers do not lose limited hours of service time due to the lack of staggered breaks and other interruptions that prevent the continuous flow of work throughout the work day can help reduce congestion caused by trucks waiting to enter the terminals or load their vehicles once inside the gates.

Collectively, these actions can help to achieve the turnover of the existing truck fleet needed to reduce emissions in a manner that improves the economic stability of drayage operations and enables independent owner-operators to make more money.

As noted above, addressing the environmental and community impacts from drayage truck operations is one of the most challenging issues involving goods movement. At this writing, discussions are ongoing in various forums. Chapter VII includes a discussion regarding the potential allocation by ARB of Bond 1B emission reduction bond funding to reduce truck emissions.

2. Truck Port Access Improvements

Assuming that appropriate actions are taken to upgrade the port drayage fleet and improve the efficiency of drayage operations from virtual container yard, common chassis pool, extended gate operations, and improved terminal operations, there are still essential improvements needed for trucks to enter and exit the ports efficiently. Such improvements reduce emissions and congestion. Each of the ports have developed detailed plans to improve truck access with projects that separate truck traffic from other mixed flow traffic and expand capacity of key arteries into and out of their facilities. Implementation of these projects will provide essential relief to neighboring communities while reducing emissions and improving truck productivity.

3. Rail Mode Increases

Increasing the fraction of container traffic that moves by rail is a critical strategy to reducing congestion and emissions caused by trucks. Without expanded facilities to load and unload containers on and off railcars, railroads have limited economic incentive to expand the mainline trunk routes required to handle more rail traffic. The ports of Los Angeles, Long Beach, and Oakland have launched intensive efforts to add "on-dock" rail terminals. These additions will add significant capacity for rail transfer within the ports. However, space within the ports is quite limited and the amount of on-dock capability is finite. To address the State's needs for increased rail moves, the construction and expansion of "near-dock" facilities is essential. However, while reducing the fraction of trucks required to serve the region, short trip truck operations are necessary between the ports and the near-dock facilities.

The completion of the Union Pacific Intermodal Container Transfer Facility (ICTF) and the proposed Southern California International Gateway (SCIG) BNSF Railyard are two infrastructure projects that would help to move container traffic from truck to rail. These two projects are listed in the Table V-2 as Preliminary Candidate Actions within a solution set for the Los Angeles/Inland Empire Corridor. As noted above, the candidate actions listed in solution sets in Table V-2 will require more rigorous analysis pursuant to the evaluation criteria relative to the specific goods movement corridor and statewide benefits that are expected to be achieved. Similarly, project-by-project review as required by the California Environmental Quality Act must be conducted and required mitigation must be identified and funded as part of a project.

Some stakeholders in the Phase II process, including the South Coast Air Quality Management District and some environmental and community groups, have expressed strong concerns regarding the two railroad projects listed on Table V-2 for the Los Angeles/Inland Empire Corridor and referenced above. ARB's health risk assessment at the railyard in Roseville, California showed an elevated estimated cancer risk (greater than 500 in a million).[58] Proximity (the distance between the source of toxic air pollutants and the receptor such as a residence or school) is a key factor in conducting a health risk assessment. The estimated cancer risk decreases the farther the receptor is from the source. Proximity to sensitive receptors such as residences, schools and day care centers warrants particular attention in the evaluation of a project. Cleaner trucks and equipment will also reduce the estimated health risk at a railyard.

As with all goods movement-related projects, communities and other stakeholders need to be respected in the selection and development of a specific project. (See Chapters III and VI for more discussion in this area.) It is imperative that such near-dock operations be conducted with the cleanest trucks and equipment possible and that all mitigation necessary for near-dock facilities to relieve community impacts (i.e., excess noise, light pollution, and visual blight) is achieved.

[58] ARB, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005, p 17.

4. Freight Community Mitigation Improvements

While moving more containers by rail is a key strategy to reduce the congestion and emissions from truck traffic, expanded rail traffic adds to congestion as the number of trains increases through developed urban areas. In the four counties of southern California, projections are that as many as 150 trains per day will move through the region over the next few years. To reduce congestion, the respective county transportation commissions have identified 131 grade crossings where train movements create substantial traffic delays and excess emissions due to extended idling. Construction of grade separations to enable simultaneous vehicle and rail traffic is a critical element of the strategy to increase the volume and fraction of container moves throughout the State.

5. System Throughput/Velocity Improvements

To meet the expected increases in trade volume, capacity improvements for rail and truck traffic will be needed within each of California's goods movement corridors. Such capacity can be achieved for rail traffic by constructing additional track along rail corridors or removing rail bottlenecks so that system speeds can be improved. Expanded rail capacity also provides opportunities to institute short-haul rail operations. While the economics of such operations require further study, the potential to reduce truck traffic and its related congestion and emissions warrants serious investigation. For truck traffic, building dedicated truck lanes, adding truck climbing lanes, and improving key intersections along truck corridors are important improvements.

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[59]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
Los Angeles/Inland Empire Corridor					
Truck Emission Reduction and Congestion Mitigation[60]					
• PierPass Extended Gate Hours Program					Provides for extended gate hours, reduced congestion and emissions
• PierPass Emission Reduction Program					Reduces emissions
• Virtual Container Yard					Reduces unnecessary truck trips to and from ports
• Common Chassis Pool					Enables more efficient use of equipment and reduces unnecessary truck trips
• Work rule flexibility[61]					Provides means to improve efficiencies and enable truck owner-operators to increase number of daily turns

[59] The project mitigation cost and project total cost columns are included to illustrate that the total cost of the project includes the cost of required mitigation, and that total cost should be funded as the cost of the project.
[60] These programs are intended to be industry-funded.
[61] This is currently under International Longshore and Warehouse Union (ILWU) consideration.

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[59]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
Truck Port Access Improvements					
• State Route 47, Alameda Corridor Expressway (including Schuyler Heim Bridge replacement)	111,000	557,000			Improves access to Terminal Island terminals and near-dock facilities
• I-710 Early Action Project: Port Terminus Improvements	60,000	300,000			Improves safety and access by upgrading State Route 1 (Pacific Coast Highway) and Anaheim Street interchanges and expands green space
• Port of Long Beach, Gerald Desmond Bridge Replacement	160,000	800,000			Improves access to Terminal Island; removes bottleneck to both ship and truck movements

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[59]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
Rail Mode Increase					
• Port of Los Angeles/Burlington Northern Santa Fe, "Southern California International Gateway" Near Dock Facility (See Chapter V Text.)	40,000	200,000			Reduces truck trips on Interstate 710; relieves rail terminal capacity constraint
• Ports of Los Angeles and Long Beach/Union Pacific, Near Dock Intermodal Container Transfer Facility Completion (See Chapter V Text.)	20,000	100,000			Reduces truck trips on Interstate 710; relieves rail terminal capacity constraint
• Alameda Corridor East Grade Separations • Los Angeles County • Orange County • Riverside County • San Bernardino County	313,000 112,000 158,000 ~~108,000~~ 691,000	1,565,000 562,000 788,000 ~~3,456,000~~ 541,000			Addresses community division safety issues; reduces vehicle emissions

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[59]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
System Throughput/Velocity Improvements					
• Burlington Northern Santa Fe/Union Pacific, Los Angeles Basin Rail Capacity Improvements (main line capacity, shuttle train demonstration project improvements) • Los Angeles County • Orange County • Riverside County • San Bernardino County	67,000 29,000 114,000 212,000 422,000	333,000 145,000 572,000 1,061,000			Addresses current and projected 2010 system capacity constraints; enhances Metrolink/ Amtrak services; facilitates rail freight shuttle service demonstration
• Burlington Northern Santa Fe/Union Pacific, Colton Crossing Grade Separation	56,000	2,111,000 280,000			Removes major railroad bottleneck; improves safety, reliability; enhances Metrolink/Amtrak services
• State Route 14 to Calgrove Blvd., Interstate 5 Truck Lanes	12,000	60,000			Removes bottleneck; improves both truck and passenger vehicle velocity

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[59]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
Bay Area Corridor					
Port Access Improvements					
• Port of Oakland, 7th Street/Union Pacific Grade Separation Reconstruction	50,000	250,000			Removes access bottleneck; improves throughput, reliability and safety
Rail Mode Increase					
• Port of Oakland, Outer Harbor Intermodal Terminal	65,000	325,000			Enhances capacity; improves performance of port intermodal operations, reduces truck trips
System Throughput/Velocity Improvements					
• Union Pacific Railroad Martinez Subdivision, Oakland to Martinez, Capacity Improvement Project	16,000	78,000			Improves access; relieves Capital Corridor, San Joaquin and rail freight train operational conflicts
• Interstate 880, 23rd and 29th Avenue Interchanges, Operational Improvements	18,000	91,000			Improves reliability and safety; enhances access to seaport and airport

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[59]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
• Cordelia Truck Scales	22,000	110,000			Improves safety; would be coordinated with I-80/I-680/SR 12 interchange improvement projects.
Central Valley Corridor					
Port Access Improvements					
• State Route 4 (Crosstown Freeway) Extension to Port of Stockton	20,000	100,000			Improves throughput and access
Bay Area/Central Valley Access Improvements					
• Altamont Pass Rail Corridor/Central Valley Rail Freight Shuttle Demonstration Project	5,000	27,000			Addresses track alignment issues; facilitates shuttle and Altamont Commuter Express services
• I-580 Westbound Trucking Climbing Lanes	20,000				Improves velocity and safety
• I-580 Eastbound Truck Climbing Lanes	20,000	100,000			Improves velocity and safety
		100,000			

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[59]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
San Diego/Border Corridor					
International Border Access/System Velocity					
• State Route 905 Six-Lane Freeway	59,000	494,000			Improves access to border; facilitates international trade (50% of unfunded balance)
• Otay Mesa East Border Crossing (new)	41,000	260,000			Improves access to border; facilitates international trade (partial funding)
• State Route 11, State Route 905 to Otay Mesa East Border Crossing	47,000	234,000			Provides access to new border crossing
Port Access Improvements					
• Port of San Diego-National City Marine Terminal Operational Improvements	11,000	57,000			Improves access

TABLE I-2
GOODS MOVEMENT ACTION PLAN
TRADE CORRIDOR IMPROVEMENT FUND PROGRAM
BOND FUNDING RECOMMENDATIONS[59]

Corridor/Region Solution Set Route or Lead Agency and Project Title	Bond Funding	Project Construction Cost (in thousands)	Project Mitigation Cost	Project Total Cost	System Benefit
State Gateways and Central Coast					
System Throughput/Velocity Improvements					
• Burlington Northern Santa Fe, Tehachapi Pass Double-Track, Tunnel Modification	16,000	82,000			Relieves bottleneck; provides for improved rail service to Port of Oakland, Central Valley
• Union Pacific, "Central Corridor" Double Track, Tunnels Modification	18,000	90,000			Improves east-west operations and reliability; provides opportunity for extension of Capitol Corridor services to Reno.
TOTAL	***$2,000,000***	***$10,262,000***			

VI. ACCOUNTABILITY - SIMULTANEOUS AND CONTINUOUS IMPROVEMENT

A. Background

As noted in the policy statement that appears prior to the Executive Summary, the State's economy and quality of life depend upon the efficient, safe delivery of goods to and from our ports and borders. At the same time, the environmental impacts from goods movement activities must be reduced to ensure protection of public health. Consistent with these policy statements, and as set forth on Page IV-3, the first Goods Movement Action Plan principle is:

> Approach infrastructure and mitigation actions on a simultaneous and continuous improvement basis. Approach funding and implementation for infrastructure and mitigation on a simultaneous basis.

This section explains how implementation of this fundamental principle will be evaluated.

B. Elements to Achieve Simultaneous and Continuous Improvement

The elements to achieve simultaneous and continuous improvement for public health and environmental mitigation will be:

1. Ongoing implementation of existing air quality programs, including the mobile source emission reduction measures set forth in the State Implementation Plan (SIP)and subsequent program modifications;

2. Implementation of the ARB new and extensive Emission Reduction Plan for Ports and Goods Movement in California; and

3. Infrastructure project compliance with the California Environmental Quality Act (CEQA), including analysis of emissions impact and quantification of any emission reduction benefits

C. Verification of Simultaneous and Continuous Improvement

In order to ensure protection of public health, verification that the planned emission reductions are occurring as planned will be performed. As the Secretaries of BTH and Cal/EPA review and revise the Goods Movement Action Plan periodically, ARB will evaluate for each of the four goods movement corridors, on a corridor-by-corridor basis, whether the emission reductions included in the ARB Emission Reduction Plan have occurred.

ARB will conduct the first evaluation in 2008. Since this evaluation will predate the first milestone years of 2010, it will consist of a qualitative check on progress to date towards implementing plan strategies needed to meet the ARB 2010 target. (This review will not trigger ramifications under Section D because a milestone year will not have yet passed.)

Subsequent progress evaluations will use the 2010, 2015, and 2020 milestone reduction targets as the performance benchmark and may result in ramifications as discussed in Section D below. Each evaluation will include every goal set forth in the ARB plan. ARB will update regional emission inventories and do an accounting of emission reductions for each corridor, based on an accounting of emission reductions for the relevant air basin(s), using the same approach used to assess progress with Clean Air Act requirements. Through Caltrans, BTH will report on the status of emission reductions achieved through infrastructure projects using the air quality analysis prepared for compliance with CEQA as the reference point. Any emissions benefits calculated for these projects will be incorporated into the accounting of emissions reductions achieved for the region. The agencies plan to conduct these evaluations according to the following schedule:

EMISSIONS INVENTORY YEAR (ARB)	SIMULTANEOUS & CONTINUOUS IMPROVEMENT EVALUATION YEAR
2007	2008*
2010	2011
2015	2016
2020	2021

*Since the 2008 review year precedes the first milestone year (2010), this review will be a qualitative progress check. This review will not trigger ramifications under Section D because a milestone year will not have yet passed.

The agencies will provide the results of the analyses for public review in each regional corridor. For the corridor in question, the evaluation could result in one of three outcomes:

SCENARIO 1: All the emission reductions planned for goods movement sources under the Emission Reduction Plan to be achieved by the end of the emissions inventory year in question have been achieved (i.e., simultaneous and continuous improvement has been verified) in the particular corridor.

SCENARIO 2: 80% or more of the emission reductions (but not all of the emission reductions) planned for goods movement sources under the Emission Reduction Plan have been achieved by the end of the emission inventory year in question in the particular corridor.

SCENARIO 3: less than 80% of the emission reductions planned for goods movement sources under the Emission Reduction Plan have been achieved by the end of the emissions inventory year in question in the particular corridor.

D. Accountability – Ramifications where Simultaneous and Continuous Improvement is Not Verified

The ramifications where simultaneous and continuous improvement is not verified will be as follows:

SCENARIO 2: For a corridor where the evaluation of the new emissions inventory shows achievement of 80% or more of the emission reductions planned for goods movement sources for the inventory year in question (but not all of the emission reductions), new strategies will be developed to correct the shortfall by the next milestone year or no later than 2 years after the 2020 milestone.

SCENARIO 3 For a corridor where the evaluation of the new emission inventory shows achievement of less than 80% of the emission reductions planned for goods movement sources for the inventory year in question, new strategies will be developed as described for scenario 2 and, if not sufficient, an incentive funding strategy will be developed to achieve the remaining emission reductions.

E. Community Impact Mitigation

Section C. of Chapter III includes important background information and policies regarding community impact mitigation. The Preliminary Candidate Action recommendations in this document include recommendations for actions to mitigate community impacts. The Community Impact Mitigation and Workforce Development Work Group emphasized the need to protect public health, address existing problems and ensure simultaneous (and continuous) movement of (infrastructure) projects and environmental measures. Implementation of the ARB Emission Reduction Plan, which is already underway in advance of the infrastructure work, will reduce the estimated health effects associated with goods movement – which is the affected communities' highest concern. ARB designed this plan to reduce both existing air pollution and health impacts and expected increases in air pollution and health impacts due to growth in goods movement. This extensive plan is in addition to project-by-project mitigation under CEQA.

To further assist in the achievement of simultaneous and continuous improvement in the area of community impact mitigation, this plan includes "Preliminary Candidate Actions" for community impact mitigation. Please see Chapter V. This plan also includes recommended conditions on the allocation by the California Transportation Commission of the Trade Corridors Improvement Fund pursuant to the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 (Bond 1B). Please see below and in Chapter VII.

1. Community Advisory Committee

In order to obtain infrastructure bond funding for a goods movement infrastructure project that is in a regional transportation plan and has not gone through the environmental review process, that project must have a Community Advisory Committee similar to that in the I-710 process. Likewise, for a new goods movement infrastructure project to obtain infrastructure bond funding, when it reaches the project EIR/EIS stage, it must have a Community Advisory Committee similar to that in the I-710 process. (However, in both cases, the I-710 process is a prototype more than a mode, and its shortcomings must be improved.)

(Goods movement projects that are in a regional transportation plan (RTP) or regional transportation improvement plan (RTIP) and have gone through the environmental review process should move without imposition of the above condition – with or without bond funding.)

2. Air Quality Monitoring

In order to obtain infrastructure bond funding for a goods movement infrastructure project, the proponent of the project, either alone or with a third party, must fund air particulate matter monitoring and monitoring for relevant toxic air pollutants to be implemented by the local or regional air district. This requirement does not apply if the district, in consultation with the ARB, determines that sufficient monitoring is already in operation in close proximity to the project. The purpose of the monitoring would be to track air quality progress and trends at the community level. This would help ensure that air quality progress is made in all communities throughout a region.

F. Public Health Surveys

Cal/EPA and BTH recommend that public health surveys be considered if communities adjacent to transportation projects selected by the CTC request them. The purpose of a health survey would be to help characterize the health status of current residents. Health surveys alone would not form a scientific basis for evaluating progress in terms of reducing the health impacts of air pollution. The methods needed to measure health consequences of exposure to air pollutants require a large population to be followed for an extended period of time (several years). Also, a very stable population would be needed (e.g., no change in lifestyle or community characteristics) in order to isolate the health benefits of decreased air pollution from other possible causes. ARB has funded a research contract exploring potential methodologies to assess these relationships to be completed in June 2008.

VII. FUNDING

A. Funding Issues

The goods movement component of the Governor's Strategic Growth Plan, based on earlier work in the development of this Action Plan, estimated that $15 billion of investment would be needed for California's goods movement infrastructure over the next decade. In addition, the ARB Emission Reduction Plan estimates that between $6 billion and $10 billion will be needed for reductions in emissions from goods movement-related sources of air pollution. Costs for required project-by-project mitigation under CEQA will also have to be factored in to determine the full funding requirement.

To meet these needs, full utilization of all traditional funding sources, public and private, is an absolute necessity. On the public sector side, a concerted effort will be needed to obtain as many dollars as possible from potential federal and local sources as summarized in Table VII-1. On the private sector side, owners and operators of sources of air pollution will be expected to shoulder the majority of necessary equipment upgrades and replacements to achieve the required level of pollution control. However, even with full deployment of existing funding sources, a sizeable shortfall of funding need persists. While the total gap is not known, alternative and innovative sources will be needed.

Of immediate interest is how best to invest the $3.1 billion for goods movement-related funds within the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 (Bond 1B) approved by voters on November 7, 2006.

B. Potential Revenue Sources for Infrastructure Projects

The total cost of a goods movement related infrastructure project should include the cost of required project-specific mitigation and the combined cost should be funded as the cost of the project. Regardless of the mechanism used to finance the construction of an infrastructure project, a defined source of funds must be identified and committed to the project. Funding is the common thread that ties all infrastructure projects together and is often the biggest hurdle to project fruition. In this context, "financing" is the mechanism used to borrow money to pay for the current cost of construction or acquisition of an infrastructure project. "Funding" is the revenue source (e.g., taxes, bond proceeds, or tolls) that is used to repay the loan.

Table VII-1: Federal, State, and Local Funding Sources

FEDERAL FUNDING SOURCES	
SOURCE	**DESCRIPTION**
Federal Excise Fuel Tax	There is a federal excise tax placed on each gallon of fuel purchased; the proceeds of which go to the Highway Trust Fund, the Mass Transit Account, and the Leaking Underground Storage Tank Trust Fund. Roughly 80 percent of revenues go to the Highway Account and 20 percent are deposited into the Mass Transit Account and 0.1 percent of total supports the Leaking Underground Storage Tank Trust Fund. In California, the federal excise tax is 15.4 cents in areas where ethanol-blended gasoline is used (80% of California) and 18.4 cents per gallon of gasoline without ethanol. In addition, 24.4 cents per gallon on diesel fuel is collected. Ethanol-blended gasoline is used in non-attainment areas in Southern California, the Sacramento Metropolitan Area, and the San Joaquin Valley, accounting for over 80 percent of all gasoline used in the state. The remaining 20 percent is subject to the full 18.4-cent/gallon federal tax. An excise tax is a charge on the production of non-essential goods. To appropriate the excise tax this year, Congress passed the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) which is the $244.1 billion federal transportation authorization bill that became effective on August 10, 2005. SAFETEA-LU continues the Transportation Equity Act for the 21st Century (TEA-21) concept of guaranteed funding, keyed to Highway Trust Fund (Highway Account) receipts.
TIFIA	The Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA) established a new federal credit program (referenced hereafter as the TIFIA program) under which the U.S. Department of Transportation (DOT) may provide three forms of credit assistance – secured (direct) loans, loan guarantees, and standby lines of credit – for surface transportation projects of national or regional significance. The program's fundamental goal is to leverage federal funds by attracting substantial private and other non-federal co-investment in critical improvements to the nation's surface transportation system. In all cases, the DOT uses a merit-based system to award credit assistance to project sponsors, who may include state departments of transportation, transit operators, special authorities, local governments, and private entities. (*from U.S. Dept of Transportation*, http://tifia.fhwa.dot.gov/)

U.S. Customs Revenues	Customs duties are paid by manufacturers, retailers, and wholesalers and can be passed on to customers. Customs revenue generally flows into the general fund of the U.S. Treasury to cover other federal expenses. Returning a portion of customs revenues would be a significant resource for goods movement infrastructure improvement.
Diesel Truck Retrofit And Fleet Modernization Program.	Section 742 of the Energy Policy Act of 2005 (HR 6) provides that the Secretary of Energy shall establish a program for awarding grants on a competitive basis to public agencies and entities for fleet modernization programs including installation of retrofit technologies for diesel trucks. There are authorized to be appropriated to carry out this section, to remain available until expended the following sums: (1) $20,000,000 for fiscal year 2006. (2) $35,000,000 for fiscal year 2007. (3) $45,000,000 for fiscal year 2008. (4) Such sums as are necessary for each of fiscal years 2009 and 2010.
STATE FUNDING SOURCES	
SOURCE	**DESCRIPTION**
State Excise Fuel Tax	In addition to the federal excise tax imposed on each gallon of gasoline and diesel fuel sold, the state imposes its own excise tax of 18 cents per gallon. This is also known as the "gas" tax. These revenues are used for specific transportation purposes and are split between the state, counties, and cities.
State Sales Tax / Prop 42	Similar to the 7.25 percent state sales tax on most goods sold in California, there is a 6 percent sales tax levied by the state on the sale of fuel. The sales tax revenue from gasoline and diesel sales was directed to the General Fund prior to the passage of Proposition 42 by voters in March 2002. Prop 42 requires the revenues to be diverted to the Transportation Investment Fund. These revenues, too, are split between the state, cities, and counties. As passed by the voters, however, Prop 42 allowed the revenues to be redirected to the General Fund in times of fiscal crisis. This occurred in both FY 2003-04 and FY 2004-2005. To protect transportation funding from these diversions, the Legislature placed on the ballot, and the voters subsequently approved, Proposition 1A in the November 2006 General Election.
Truck Weight Fees	Weight fees are annually levied upon commercial vehicle owners when they register their vehicles. They are typically based on the gross weight of the vehicle. Total revenue from these fees is approximately $1 billion per year.

LOCAL FUNDING SOURCES	
SOURCE	**DESCRIPTION**
Local Sales Tax	Since 1984, most urban counties in the State, and a few rural counties, have adopted local voter-approved sales taxes dedicated to transportation programs. Typically, the funding mix approved by voters includes about one-fourth of the proceeds for transit, one third for local streets and roads maintenance, and the balance for major highway improvements. The amount dedicated collectively for state highway improvements has come to provide nearly fifty percent of the new capacity improvements to the state system. Article XIIIB of the California Constitution provides the authority and requirements for the imposition of local sales tax measures subject to voter approval.
OTHER FUNDING SOURCES	
SOURCE	**DESCRIPTION**
Tolls	Fee assessed for the use of infrastructure. Toll roads and bridges are the most common form of infrastructure where users are charged for their use of the facility.
User Fees	Fees can be assessed for the use of infrastructure either directly or indirectly. Fees could be charged by users of port and freight movement corridors. Examples: 1. The Alameda Corridor charges "User Fees" and "Container Fees": User fees are triggered whenever a container is loaded/unloaded and transported by rail to/from a port facility or uses the Alameda Corridor. Container charges are applied to all loaded water-borne containers transported by rail to/from a rail ramp in a 10 county Southern California Region, provided the container passes trough the San Pedro Bay Ports, but is neither loaded at a port facility nor transported over the Corridor. 2. PierPass is a non-profit corporation created to collect container fees on goods moved through some California ports. The container fee is collected only during the peak daytime hours between 3 a.m. and 6 p.m., Monday through Friday. The collected funds pay for the port's new extended hours of operation.

C. Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006

1. Overview

As approved by the voters on November 7, 2006, Bond 1B sets forth the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006. This new law enacts $19.925 billion in general obligation (GO) bonds to fund repairs, reduce congestion, improve bridge safety, expand public transit, and improve port security statewide. Of the $19.925 billion, $3.1 billion would be deposited in the California Ports Infrastructure, Security, and Air Quality Improvement Account. From this account, funding will be made available for goods movement transportation infrastructure investment, air quality mitigation, and port security enhancement. In brief, the $3.1 billion will be allocated by the Legislature as follows.[63]

a. Trade Corridors Improvement Fund – $2 billion

   $2 billion will be transferred to the Trade Corridors Improvement Fund to be allocated by the California Transportation Commission (CTC). The CTC will allocate these funds in a manner that addresses the State's most urgent needs and considers other factors as enumerated in the legislation. The new law requires the CTC to consult this Goods Movement Action Plan in determining the projects eligible for funding. See Section 2 below regarding the recommendations of BTH and Cal/EPA to the CTC regarding allocation of these funds.

b. California Air Resources Board – $1 billion

   Bond 1B makes $1 billion available to the Air Resources Board to allocate for emission reductions, not otherwise required by law or regulation, from activities related to the movement of freight along California's trade corridors. See Section D3 below for more information and the joint recommendations of Cal/EPA and BTH to ARB regarding allocation of these bond funds.

c. Office of Emergency Services – $100 million

   $100 million will be made available to the Office of Emergency Services for allocation as grants for port, harbor, and ferry terminal security improvements.

[63] California State Senate. SB 1266, Perata. *Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006.*

2. $2 Billion for the Trade Corridors Improvement Fund: Overview and Recommendations to CTC regarding Allocation

a. Overview

As approved by the voters on November 7, 2006, Bond 1B sets forth the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006.
Under this new law, $2 billion will be transferred to the Trade Corridors Improvement Fund. On appropriation by the Legislature, the funds would be available for infrastructure improvements along federally designated "Trade Corridors of national significance in California or along other corridors within California that have a high volume of freight movement, as determined by the California Transportation Commission (CTC).

The CTC will allocate these funds as specified in Bond 1B, and the allocation will be subject to such conditions and criteria as the Legislature provides in statute. Bond 1B requires the CTC to consult this Goods Movement Action Plan in determining the projects eligible for funding. It also requires the CTC to consult trade infrastructure and goods movement plans adopted by regional transportation planning agencies, adopted regional transportation plans required by state and federal law, and the statewide port master plan prepared by the California Marine and Intermodal Transportation System Advisory Council (Cal-MITSAC) pursuant to Section 1760 of the Harbors and Navigation Code, when determining eligible projects for funding.

b. Joint Exercise of Powers Authority

A key element for yielding satisfactory outcomes is the institutional arrangements with the necessary powers, authorities, and decisiveness to plan, fund/finance, and deliver completed projects on time and within budget. While both Caltrans and a range of local multi-modal transportation agencies in the State have well-established track records for the development and implementation of traditional highway and transit projects, there is less experience with freight-related or intermodal goods movement projects.

For example, the Alameda Corridor, a project of "national significance" was financed and delivered by a single purpose agency established under provisions of the California Government Code as a Joint Exercise of Powers Authority (JEPA). Passage by the voters of Bond 1B establishes for the first time in the State's history a dedicated source of State revenues to support goods movement projects of both regional and statewide significance. Therefore, it is important that these revenues are targeted to projects, which have the characteristics to meet or exceed the criteria outlined in Chapter IV of this Goods Movement Action Plan. In addition, it is essential that the bond

proceeds for the high priority projects be "leveraged" with private sector investments.

One of the key business principles required to attract private investments is "certainty and predictability." Establishment of a single purpose joint powers governing structure has a greater potential for generating a high level of trust or assurance concerning project financing and delivery.

The unique opportunity presented by the passage of Bond 1B, and the associated dedicated revenue stream for goods movement projects, demands that decision makers support effective institutional arrangements responsible for implementation of projects identified in the solution sets in this Goods Movement Action Plan.

c. BTH and Cal/EPA Joint Recommendations for Eligibility Conditions on CTC Allocation of Infrastructure Bond Funds

In addition to the requirements set forth in Bond 1B, BTH and Cal/EPA recommend that the CTC apply the following conditions for project eligibility to projects under consideration for funding from the Trade Corridors Improvement Fund.

1) Sponsors of multi-jurisdictional projects are required to either utilize an existing Joint Exercise of Powers Authority, or establish a new Joint Exercise of Powers Authority, consistent with provisions of the California Government Code, Sections 6500-6599. The Southern California National Freight Gateway Strategy Memorandum of Understanding of southern California transportation commissions and related entities should be consummated to develop the necessary framework for cooperation for establishment of a JEPA.

2) A demonstration that the Joint Exercise of Powers Authority responsible for the project, possesses the powers and legal authority to: a) enter into design build agreements; b) enter into a franchise or public private partnership arrangement; c) issue bonds; and d) negotiate the establishment of user fees.

3) Community Advisory Committee

For an infrastructure improvement project that is in a Regional Transportation Plan (RTP) and has not gone through the environmental review process, that project must have a Community Advisory Committee similar to that in the I-710 process. Likewise, for a new project to obtain funding, when it reaches the project EIR/EIS stage, it must have a Community Advisory Committee similar to that in the I-710 process.

(However, in both cases, the I-710 process is a prototype more than a mode, and its shortcomings must be improved.)

(Goods movement projects that are in a Regional Transportation Plan (RTP) or Regional Transportation Improvement Plan (RTIP) and have gone through the environmental review process should move without imposition of the above condition – with or without bond funding.)

4) Project Funding

The total cost of the infrastructure improvement project must include the cost of required project-specific mitigation and the total cost must be funded as the cost of the project.

5) Air Quality Monitoring

The proponent of the infrastructure improvement project, either alone or with a third party, must fund air particulate matter monitoring and monitoring for relevant toxic air pollutants to be implemented by the local or Regional Air District. This requirement does not apply if the district, in consultation with the ARB, determines that sufficient monitoring is already in operation in close proximity to the project. The purpose of the monitoring would be to track air quality progress and trends at the community level. This would help ensure that air quality progress is made in all communities throughout a region.

6) Green Construction Equipment

Construction of the project should be with green construction equipment to the extent feasible and be cost effective.

3. Other Applicable Bond Funding Programs

Within the broad scope of Bond 1B, several of the program categories will fund transportation improvements that may directly or indirectly benefit goods movement. Six of those programs are of primary interest. These are described below:

a. Corridor Mobility Improvement Account (CMIA) - $4.5 billion

This program account provides funding to relieve congestion by expanding capacity, enhancing operations, and improving travel times in high congestion highway travel corridors. Funds may also be used to improve the connectivity of the State Highway System between rural, suburban, and urban areas. One of the project selection criteria is the improvement of access to markets and commerce. As congestion is reduced, and connectivity is improved, freight movement will be enhanced. For example, it is possible that the bottleneck at

the Interstate 80/680/State Route 12 interchange complex will be improved using CMIA funds, which will both reduce congestion at this interchange, and improve connectivity between the San Francisco Bay Region and the Sacramento Valley.

b. STIP Augmentation - $2.0 billion

This category provides an augmentation of the State Transportation Improvement Program (STIP), which funds a wide variety of statewide and regionally significant projects. Most of these projects are to improve capacity on highway, roadway, rail and guideway transit systems. As projects are implemented to improve highway capacity, they may directly or indirectly benefit freight movement. Projects which improve passenger rail corridor capacity, for example, may lead to corresponding improvements in rail system capacity that improves the throughput, velocity, and reliability of the system. In many cases projects under the CMIA can be nominated under the STIP Augmentation category. However, projects such as the widening of Route 58, from two lanes to a four-lane expressway in San Bernardino County, may be considered for STIP augmentation funds.

c. State Route (SR) 99 Improvements - $1.0 billion

The $1.0 billion made available for SR 99 is for improvements to be used for safety, operational enhancements, rehabilitation, or capacity improvements necessary to improve the State Route 99 corridor of approximately 400 miles of the Central Valley. The master plan for the SR 99 corridor (comprised of the SR 99 Corridor Enhancement Plan and Business Plan) outlines a 20 corridor upgrade program, including corridor objectives, priority categories, funding phases, and public outreach. The 60+ proposed projects fall under four identified priorities: Freeway (from expressway) conversions, capacity increasing projects (e.g., widening freeways from four to six lanes); major operational improvements; and new interchanges.

d. State Highway Operation and Protection Program - $750 million

This existing program was augmented by $750 million. Key to goods movement interests is the funding of such projects as bridge rehabilitation, replacements and upgrades, safety roadside rests, various operational improvements including the implementation of intelligent transportation systems, and weigh stations and weigh-in-motion facilities. An example project is the Interstate 5 Pit River Bridge Rehabilitation, currently under construction in Shasta County.

e. Intercity Rail Improvements - $400 million

Under the Public Transportation Modernization, Improvement, and Service Enhancement Account, $400 million is provided for intercity rail improvements. Of this amount, a minimum of $125 million is reserved for railcars and locomotives. Similar to the case with the STIP Augmentation, projects funded under this category, which improve passenger rail services capacity, may lead to corresponding improvements in overall rail system capacity that will benefit rail freight movement. They also could reduce the demand on TCIF funds previously discussed. For example, as the Burlington Northern Santa Fe line is triple tracked between Los Angeles and Fullerton to facilitate *Pacific Surfliner* operations, freight services will also benefit.

f. Highway-Railroad Crossing Safety Account - $250 million

This program account provides $250 million for railroad grade crossing improvements. Of these funds, $150 million is allocated for the completion of high-priority grade separation and railroad crossing safety improvements. Project allocations will be made in accordance with the grade separation priority list prepared by the California Public Utilities Commission (CPUC). The remaining $100 million will be allocated by the CTC, in consultation with the Department, the CPUC, and the High-Speed Rail Authority, for high-priority rail crossing improvements, including grade separation projects, that are not part of the grade separation priority list process of the CPUC. Goods movement considerations, including the current and projected freight train volumes, will be factors in the project selections.

4. Means of Reducing Infrastructure Project Costs

It is also important to identify ways in which infrastructure project delivery can be expedited and costs reduced without weakening the environmental review process. To this end, public private partnerships, design-build, and design-sequencing are all critical tools.

"Public-private partnerships have the potential to play a significant role in providing a real solution to the problem of congestion. Public-private partnerships can provide additional sources of funding that may allow needed transportation projects to be built."[64] Benefits of public private partnerships include:

- Savings of time and money through innovative ways to finance and construct transportation infrastructure projects.
- More efficient allocation of risks between the public sector and the private sector.
- More effective pricing of current and future transportation infrastructure projects so that the public use is more efficient.[65]

[64] Federal Highway Administration, US Department of Transportation. *MANUAL FOR USING PUBLIC-PRIVATE PARTNERSHIPS ON HIGHWAY PROJECTS*. November 2005. Available online at http://www.fhwa.dot.gov/ppp/
[65] Ibid.

Design-build authority would allow the State to contract with one entity to deliver a project from initial design and engineering to completion of project construction. Rather than delaying all construction until design of the entire project has been completed, design-sequencing allows construction to commence when the design of each phase of a project is completed. These tools can safely deliver projects with significant time and cost savings, while adhering to the environmental review process.

D. Funding Tools for Public Health and Environmental Impact Mitigation

The ARB April 2006 Emission Reduction Plan for Ports and Goods Movement in California estimates cost of the goods movement-related emission reduction strategies at $6-10 billion over 15 years (in present value dollars). As discussed in more detail below, the options for paying for these costs include:

- Traditional regulations (where the owner/operator pays for the cost of compliance)
- Incentives
- General Obligation Bonds in the form of incentives or other subsidies
- Federal funding
- User-based fees
- Market-based approaches

1. Regulations

In general, ARB staff presumes that traditional regulations (which place the costs of control on the owners and operators of the polluting sources) will provide the vast majority of progress needed to protect public health and attain ambient air quality standards. But, air pollution from ports and goods movement raises some special issues. For example, the economic viability of some of the sources (such as an owner with a single port truck or a single commercial fishing vessel) creates a situation where financial assistance may be essential to support the needed upgrade to cleaner equipment. Additionally, federal or international restrictions on State regulation of some goods movement sources (e.g., locomotives and ships) takes away the option of regulations in some instances.

2. Incentives

In recent years, regulatory programs have been supplemented with incentives to accelerate voluntary actions such as replacing older equipment. Incentive programs such as the Carl Moyer Program are both popular and effective. They also help to demonstrate emerging technologies that then set a tougher emissions benchmark for regulatory requirements. Most of the existing incentive programs are designed to pay for the incremental cost between what is required and advanced technology that exceeds that level. The incentive programs are publicly funded by general fund taxes

or by fees imposed on California drivers as part of their annual registrations, smog inspections, or new tire purchases. California is currently investing up to $140 million per year to clean up older, higher emission sources. Ten percent of the Carl Moyer funds that flow through the State budget are reserved, by ARB, for projects of statewide significance, including goods movement-related clean-up projects. The U.S. Congress recently authorized a similar diesel emissions reduction program at the national level for $200 million per year over five years but has not yet appropriated funds for that purpose.

3. Bond 1B (November 2006): $1 billion in Bond Funding for Emission Reductions from Activities Related to Goods Movement: Overview, Recommendations to ARB regarding Allocation and Example Projects

a. Overview

The November 2006 Transportation Bond approved by the voters on November 7, 2006 (Proposition 1B - the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006) includes $1 billion to accelerate the cleanup of air pollution caused by goods movement activities in California. With appropriation by the Legislature, and subject to such conditions and criteria contained in a statute enacted by the Legislature, the ARB will appropriate this money over the next several years to fund emission reductions, not otherwise required by law or regulation, from activities related to the movement of freight along California's trade corridors.

In April of 2006, as part of its efforts in the Goods Movement Action Plan process, the ARB approved its comprehensive Emission Reduction Plan for Ports and Goods Movement in California. The Plan shows how pollution must be reduced from the trucks, ships, locomotives and other equipment that move goods in California. The Plan's goals include reducing the toxic air pollution from these sources by 85 percent by 2020 and reducing criteria pollutants by the amounts necessary to reach health protective standards.

The adopted plan shows that the technology exists to drastically reduce emissions while trade grows, but the technology will not be utilized unless a combination of new regulations and financial incentives are put into place. The ARB estimates the cost of reducing goods movement emissions at between $6 billion and $10 billion over the next 15 years, depending on how much growth occurs, and which measures are ultimately employed. Most of these costs would be borne by the private sector, but part of the effort will need the infusion of incentive funds, such as those provided in Bond 1B, to ensure timely and full implementation.

Historically, sources of air pollution have been required to install cost-effective control technology via local, state, or federal regulations. However, a significant portion of goods movement sources are generally outside of California's direct regulatory control. These sources include locomotive and ship engines. While a

degree of State regulation can be applied to these engines, public incentive funds are essential to accelerate the utilization of cleaner technologies. Additionally, ARB expects that the incentive funds will stimulate the investment of substantial matching funds. Further some of the other major goods movement pollution sources although subject to state regulatory authority, lack the financial resources to prove the needed pollution cleanup. Certain categories of trucks, which are a major source of goods movement-related emissions, fall in this category. Incentives to reduce emissions from certain categories of trucks will be critical to addressing air pollution attributable to goods movement sources.

b. Recommendations to ARB regarding Allocation

It is clear that financial support for emission reductions is essential for a number of critical emission source categories in the goods movement sector. Cal/EPA and BTH recommend that ARB allocate the monies to air pollution projects in a manner that:

1. Maximizes emission reduction benefits;

2. Reduces community health risk along all four of the trade (goods movement) corridors;

3. Provides early reductions;

4. Assists ARB in implementing ARB Emission Reduction Plan for Ports and Goods Movement in California (Emission Reduction Plan); and

5. Maximizes matching funds on an aggregate or program basis.

Although particular focus has been on air quality impacts at the Ports of Los Angeles and Long Beach, Cal/EPA and BTH urge ARB to consider all four of the goods movement corridors and factor in the unique air quality issues faced in each of the four corridors.

4. Federal Funding

The federal government has a responsibility to reduce goods movement related emissions for two reasons. First, U.S. EPA is legally obligated to reduce emissions from interstate transportation sources to the levels needed to protect public health everywhere in the U.S., including in California with its severe air pollution problems. Second, because California ports are a gateway to the U.S. market, the federal government must help mitigate the disproportionate impacts in California communities that are conduits for movement of imported goods to other states.

This year, the Legislature passed Senate Joint Resolution No. 31 (Lowenthal, 2006). In this resolution, the Legislature urged the U.S. EPA Administrator to adopt federal regulations limiting emissions from marine vessels, locomotives, and aircraft in order to achieve healthful air quality in California and other areas with air quality problems. It is critical that U.S. EPA take aggressive action to regulate federal goods movement sources.

The U.S. EPA has taken effective action to make new trucks substantially cleaner in the future. It has done the same for new, off-road diesel equipment, although over a much longer timeframe. The federal government has yet to deal effectively with the more challenging emission sources. It needs to take aggressive action to push tougher international emission standards for ships; to set more stringent national emission standards for locomotives or marine vessels (those regulations are currently pending); and to help clean up the millions of *existing* diesel engines in interstate trucks, off-road equipment, locomotives and ships.

Where federal regulations can not reach, the national government must step forward, as California did, with sufficient incentive funding to fill the gap. For example, a federal version of California's Moyer Program would be highly cost-effective. The U.S. EPA has provided several small grants thus far, contributing $953,000 to California goods movement-related projects under the West Coast Clean Diesel Collaborative. Congress also took a step in the right direction last year by authorizing up to $200 million a year for five years for the National Clean Diesel Campaign – now it must follow through with the allocation of actual funding.

5. User Fees

The issue of whether a system of user fees could be established to cover part of the public health and environmental mitigations costs raises many legal and policy issues. For example, who would collect such fees; under what legal authority would the fees be assessed; would the fees be voluntary or mandatory; and in what amount, and for what purpose, would the fees be assessed? This issue has been and is likely to continue to be the subject of ongoing discussion at the Legislature.

Key elements of any such system should:

- be consistent with federal and state laws;
- be part of a public-private partnership;
- take into account opportunities to leverage additional funding;
- include more sea ports than just the Port of Los Angeles and the Port of Long Beach;
- consider all forms of shipping;
- consider all ports of entry;
- consider multi-media impacts (e.g., water pollution in addition to air pollution); and
- require accountability.

6. Market-Based Approaches

Market-based approaches are another alternative to fund emission reductions. Market-based approaches raise significant environmental justice issues. See Chapter V of the ARB Emission Reduction Plan for Ports and Goods Movement in California for further discussion regarding market-based approaches.

VIII. OTHER CRITICAL ISSUES

A. Innovative Technologies

The implementation of new technologies or the shifting of technological paradigms is a complex process in any environment or industry. This complexity is amplified when considering such a shift in the public sector. An innovative technology may appear impressive on paper or in presentation, but it is the obligation of the State to ensure the feasibility and benefits of such measures before committing public funds. A work group was convened to identify the role of innovative technology in the improvement of goods movement operations and systems. The work group consisted of individuals with expertise in ports, ships, rail, trucking, public health and the environment, community impacts and homeland security. It was determined that a widespread view of technology can lead to significant goods movement gains in productivity, security, safety, efficiency, and public health and environmental protection. In this regard, the work group recommended that technology enhancements be integrated into all elements of the Plan. Based on this work group's recommendations, public comments and staff input, the following factors should be weighed when considering innovative technologies:

- Faster turnaround times for calling vessels.
- Shorter dwell times for containers and cargo.
- Optimal use of port resources such as yard space and cranes.
- Safe handling of cargo (particularly hazardous cargo).
- Enhanced facilities and services for users.
- Effective management of large volumes of information.
- Improved ability to mitigate public health and environmental impacts in adjacent communities.
- Improved energy efficiency of goods movement.

Identifying appropriate technologies to support the Governor's Strategic Growth Plan (SGP) will be a critical element of its successful implementation. Recognizing the need for technical expertise in this area, the Secretary of the BTH and the Director of Transportation established a Research and Technology Advisory Panel (RTAP). This panel includes seven committees, under the general oversight of an executive committee. A goods movement committee comprised of public, private, and academic experts, will provide guidance on the implementation of goods movement-related technologies as part of the implementation of the GMAP. Emphasis will be placed on identifying priority strategies for trade corridors of national significance, and in developing technology-based strategies for funding under the Trade Corridor Improvement Fund or other sources established by Propositions 1A and 1B.

Some specific innovative technologies have been identified in a preliminary manner for enhancement of equipment (Table VIII-1), the system (Table VIII-2), and communications (Table VIII-3). The specific technology enhancement measures are

gauged on their ability to satisfy several goods movement criteria. The check marks in the following tables are not a result of extensive study or review. Rather, they reflect suppositions about the possible merits of the technologies listed. When they are finalized, the tables can be considered preliminary evaluation models for prioritizing the implementation of new technologies.

Table VIII-1: Equipment Technology Enhancements

Technology Enhancement Measures	Category			Criteria/Metrics									Implementation		
	Operations	Equipment	Infrastructure Implications	Increases Velocity	Increases Throughput	Increases Reliability	Reduces Congestion		Reduces Environmental Impact	Commercially Available	Homeland Security Applications	System Compatibility	Costs	Responsibility for Implementation	Near Term Intermediate Long Term
							Terminal	Regional							
Equipment															
Electrical Rail Mounted Gantry Cranes	√	√	√		√	√	√			√		√	TBD	TO, P	IT
Dual Hoist Quay Cranes	√	√					√			√			TBD	TO	NT
Computer Automated Container System	√	√					√		√	√			TBD	TO	IT
Unitary Equipment Handling System	√	√	√				√			N/A		√	TBD	TO, P	IT
Energy Recovery/Hybrid Container Handling Systems		√							√				TBD	TO, RR	NT
Electric Cargo Handling Equip.		√							√	√			TBD	TO, P	IT
Fuel Cell Locomotives		√							√				TBD	RR	IT
Hybrid Locomotives		√							√				TBD	RR	NT
LNG Locomotives		√							√				TBD	RR	IT

LEGEND

P	Port Authority	O	Other
RR	Railroad	NT	Near Term
TO	Terminal Operators	IT	Intermediate
SL	Shipping Lines	LT	Long Term

Table VIII-2: System Technology Enhancements

Technology Enhancement Measures	Category			Criteria/Metrics									Implementation		
	Operations	Equipment	Infrastructure Implications	Increases Velocity	Increases Throughput	Increases Reliability	Reduces Congestion		Reduces Environmental Impact	Commercially Available	Homeland Security Applications	System Compatibility	Costs	Responsibility for Implementation	Near Term Intermediate Long Term
							Terminal	Regional							
System															
Inland Port	√		√	√	√		√	√	√				TBD	RR, TO, P	IT
Maglev Cargo Conveyor	√	√	√					√	√				TBD		LT
Texas Transportation Institute "SAFE Freight Shuttle"	√	√	√					√	√				TBD		LT
Short Sea Shipping	√		√					√					TBD		LT
Gravity Conveyor System			√						√				TBD		LT
Rail Electrification		√	√			√		√	√	√			TBD	RR	LT
Dedicated Clean Truck Fleet for Near-Dock		√							√	√		√	TBD	P, TO	IT
On-Dock Rail Optimization	√		√	√				√	√	√		√	TBD	TO, RR	NT
Chassis Pool	√			√	√		√	√	√	√		√	TBD		NT
Statewide Intelligent Transportation System	√		√	√	√	√	√	√		√	√	√	TBD		IT

LEGEND

P Port Authority
RR Railroad
TO Terminal Operators
SL Shipping Lines
O Other
NT Near Term
IT Intermediate
LT Long Term

Table VIII-3: Communications Technology Enhancements

Technology Enhancement Measures	Category			Criteria/Metrics									Implementation		
	Operations	Equipment	Infrastructure Implications	Increases Velocity	Increases Throughput	Increases Reliability	Reduces Congestion		Reduces Environmental Impact	Commercially Available	Homeland Security Applications	System Compatibility	Costs	Responsibility for Implementation	Near Term Intermediate Long Term
							Terminal	Regional							
Communications															
Radio Frequency Identification		√		√		√	√				√	√	TBD	TO	NT
Real Time GPS Inventory Systems		√		√		√	√			√	√	√	TBD	TO	NT
Java Enabled Mobile Phone GPS		√		√		√				√	√	√	TBD	TO	NT
GPS Geofence around sensitive neighborhood receptors		√				√			√	√	√	√	TBD	TO	NT
Virtual Container Yard		√		√	√		√	√		√		√	TBD	P, TO	NT
Appointment System		√		√	√	√	√	√	√	√	√	√	TBD	TO, O	NT
Computer Automated Terminal Information Management System		√		√		√	√			√	√		TBD	TO	NT

LEGEND

P Port Authority
RR Railroad
TO Terminal Operators
SL Shipping Lines
O Other
NT Near Term
IT Intermediate
LT Long Term

The proposed innovative technologies have varying levels of criteria satisfaction that become evident when comparing one group to another. Equipment enhancements tend to primarily reduce congestion and environmental impact. Whereas terminal enhancements tend to primarily enhance throughput. System enhancements tend to satisfy a wider scope of criteria more notably, especially in terms of reducing environmental impact and congestion. Likewise, communications technology tends to significantly meet a wide range of criteria. Communications technology tends to have especially high marks in velocity improvement, reliability improvement, and homeland security applications. Communications technology also holds the greatest potential for near-term gains. These technologies enable the tracking of containers on a real-time basis and can enhance the identification of workers and trucks for homeland security considerations. Of special interest is the broader use of Radio Frequency Identification (RFID) and related technology with the ability to track trucks, containers, and chassis. Such technology provides the ability to institute operational improvements such as:

- Virtual Container Yards
  A virtual container yard is an Internet matching system for empty containers so that a physical container yard is not required and the return of empty containers to the port is minimized.

- Shared Chassis Pools
  A shared chassis pool is a regional pool of intermodal container chassis that can be used by different companies and truckers eliminating the need for truckers to bring their own chassis.

- Trucker Appointment Systems
  Trucker appointment system is an operational improvement at the ports where truckers schedule pickup and delivery times, thus reducing congestion and increasing velocity.

Collectively, the improvements enabled by innovative technology will reduce truck trips, improve velocity, and reduce emissions and congestion. Further research is necessary to more fully explore these and other technology applications. In addition to the innovative goods movement technologies described above, Caltrans and local transportation authorities are currently employing Intelligent Transportation Systems (ITS). ITS is the electronics, communications, or information technology processes applied to transportation operations that result in improved transportation efficiency and safety.[66] The potential to integrate technologies such as RFID with existing and future ITS offers vast opportunities in the improvement of goods movement operations and systems.

[66] California Department of Transportation (Caltrans). Local Assistance Program Guidelines (LAPG). Chapter 12, Section 12.6: *Intelligent Transportation Systems*. Page 12-15

B. Consideration of Air Freight

The Goods Movement Action Plan work focuses on addressing the most significant and most immediate issues surrounding the current and future growth of goods movement in California. In this phase, the Administration is focused on the challenges and opportunities associated with container traffic that enters via California's global gateways. As of yet, the Goods Movement Action Plan work has not addressed air freight. The Phase I report noted that air cargo imports over the 2002 to 2020 period are expected to increase 40 percent while air cargo exports are expected to increase 188 percent when measured on a dollar basis.[67] The infrastructure needs to support this growth have been described in a report prepared by the California Agricultural Technology Institute[68] and in testimony by Caltrans Director Will Kempton before the House Subcommittee on Aviation.[69]

Almost 99 percent of current airborne imports and 93 percent of all airborne exports rely on the State's two major airports, Los Angeles International Airport (LAX) and San Francisco International Airport (SFO).[70] As almost 50 percent of such cargo is shipped in commercial passenger aircraft, cargo airlift capacity is more a function of air passenger limits than of dedicated freight aircraft handling limits. In the near term, air cargo customers enjoy a surplus of airlift capacity that helps keep shipping costs relatively low.

As both LAX and SFO face serious challenges to accommodate future passenger growth beyond the next 15 to 20 years, the prospects of directing traffic to other airports within the state for expanded international service is contemplated.[71] However, airlines and shippers are reluctant to make commitments to such sites until the population density is deemed sufficient to support the high cost of international flight operations. In addition, former military bases envisioned as dedicated air cargo facilities face similar reluctance by shippers to make investments needed for ground support operations.

Increasing international air freight capability among a wider range of California airports would help relieve congestion in ground support and ground access while providing more convenient access to local users. Such diversity would aid many industries, especially California's agricultural producers as they seek expanded international markets for high value and highly perishable specialty crops.[72] Further evaluation is needed to develop strategies that would enhance the attractiveness of international air freight operations at secondary airports and to better understand the integrated goods movement dynamics between air, sea, and land operations. The Administration is committed to examining these issues in future phases of the Goods Movement Action Plan.

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[67] Phase I Goods Movement Action Plan. Released September 2005.
[68] Center for Agricultural Business, California State University, Fresno. *The Role of Air Cargo in California's Agricultural Export Trade*. May 2005.
[69] Kempton, Will. Director California department of Transportation. Statement Made Before the Subcommittee on Aviation Committee on Transportation and Infrastructure U.S. House of Representatives. March 20, 2006
[70] Ibid.
[71] Ibid.
[72] Ibid.

Movement of Agricultural Produce by Air

In 2001, the gross cash income from California's agricultural producers was $27.6 billion. California produces over half of the nation's fruits, nuts and vegetables and is the leading (or only) producer of such high-value crops as almonds, artichokes, figs, dates, clingstone peaches, olives and raisins.[73] The value of California's agricultural exports in 2004 was approximately $8.2 billion[74], or about 14 percent of the total value of all United States agricultural exports. In addition to this, California's agriculture industry is a job generator and contributes to the overall economic health of local communities and the state as a whole. A significant amount of agricultural goods, from various fruit such as bananas, to flowers and meat and leather products, also are imported through our international air and sea gateways. Nevertheless, changing demographics, commute patterns and infrastructure capacity constraints are having a negative impact on pick up and delivery of time-sensitive farm products.

As formerly rural farming communities throughout the state become 'bedroom communities' for more urban areas, traffic volumes on local and regional roads are dramatically increasing. Trucks, cars and farm machinery increasingly share a network that was not designed to support current volumes. Connections to and through these networks are often lacking, creating access bottlenecks to major corridors. Although roadway improvements are planned in many communities, identifying and developing appropriate transportation options that recognize the unique needs of the agricultural industry must be a part of an effective goods movement strategy.

Although truck, rail and ship are the traditional transportation modes for agricultural products, as California agriculture shifts to higher-value products air cargo is becoming a more common, viable and economical transportation option. In addition, international efforts to liberalize agricultural products trade barriers and international air transport regulations will both open new markets to California's producers and expand existing ones.

Nevertheless, without significant infrastructure improvements, California's air cargo infrastructure will be incapable of supporting these new market opportunities. Passenger and air cargo volumes are expected to double or even triple by 2025.[75] Given that 1) over half of air freight is carried on passenger airlines; 2) the state's two main passenger air hubs (LAX and SFO) are at or near capacity (with significant community opposition to any expansion to runways or cargo terminals); and 3) congestion on adjacent highway segments puts perishable commodities at risk, it is clear that agricultural producers will seek to shift some of this air cargo to airports in other parts of California, such as Mather Field airport and Sacramento International

[73] "Aviation in California: Benefits to Our Way of Life (Final Report)", California Department of Transportation, Division of Aeronautics, June 2003
[74] California Department of Food and Agriculture, University of California Agricultural Issues Center
[75] "The Role of Air Cargo in California's Export Trade", O'Connell et al, California Agricultural Technical Institute, Executive Summary, pp 1-4

Airport in Sacramento County, Ontario International Airport in San Bernardino County, March GlobalPort in Riverside County and Oakland International Airport. Each of these options has the potential to benefit particular sectors of the agricultural export economy. For example, the beginnings of overseas service from Sacramento County will provide Central Valley agricultural producers with easier and more direct access to international markets.[76] Likewise, there are smaller, municipal airports adjacent to farming communities (Salinas, Merced) that could provide 'niche market' benefits.

B. Evaluation of Short Sea Shipping

Short sea shipping is a broad concept, which involves the movement of maritime cargos by ocean-going ships or barges. In California, it would include the movement of containerized cargo and empty containers between the primary California ports of Los Angeles, Long Beach, and Oakland, and the urban areas surrounding these ports. It also includes the movement of cargos by barge up the Sacramento/San Joaquin Rivers to either Sacramento or Stockton. There has also been extensive interest in this concept nationwide, as the U.S. Maritime Administration and regional interests look for less polluting alternatives to congested landside movement of ocean containers.

Feasibility research has primary focused on two different service concepts. The first is of an overnight service between the Los Angeles/Long Beach and the Bay Area metropolitan regions, as an alternative to either truck or rail movements of international or domestic cargos between either these two areas. Trailers would be loaded on 900-950 foot ships, and carried overnight between the two areas. The second is a barge concept, where containers arriving or departing the Ports of Los Angeles or Long Beach, bound for San Diego or Ventura Counties, would be barged instead of driven by truck to or from the Ports of San Diego and Hueneme, where they would be picked up or delivered. The Port of Oakland is also considering a concept where containers would be barged to and from the Port of Sacramento for final distribution or storage. Even today, some limited cargo movement by barge does occur, although most of these movements are of bulk cargos (e.g., aggregate), rather than merchandise cargos.

The development of such services has had several significant issues, however. The key ones are market potential, terminal location, and cost. To have significant market potential/penetration, such services must offer competitive travel times using high speed ships, reliability at or above what truck or rail services could offer, and be fairly seamless to the shipper/receiver. By nature, origin and destination terminals must have waterside and landside accessibility, and sufficient landside terminal acreage. At this point, this has been a major stumbling block, in identifying scarce potential port terminal sites in Southern California and to a lesser extent in Northern California.

Cost considerations are also a major issue. Because the ships would travel between U.S. ports, the Jones Act would apply, which would require the ships to be built domestically at a much higher cost (with some estimates for initial startup of a Los Angeles/Bay Area

[76] Ibid.

service at $3-5 billion including terminal costs). Despite being a domestic service, U.S. Harbor Maintenance Tax fees would be applicable on all shipments, raising the cost differential between short sea and rail/truck shipment of freight. Labor costs could also be a concern, particularly if International Longshore and Warehouse Union (ILWU) workers were involved in ship loading and unloading. Domestic ship crewing requirements could also be an issue.

The significance of these issues has limited short-sea shipping services to where either a service niche can be filled (between Seattle/Tacoma to Alaska), or where sea operations offer a significant land distance reduction alternative (Houston to Tampa, Norfolk News to Baltimore, Wisconsin to Michigan). Some of these issues led to the recent failure of a short sea shipping demonstration on the Hudson River between New York City and Albany, and the Matson Lines service along the Pacific Coast in the 1980s. Still, with increasing landside congestion at major ports and in major urban areas, diesel emissions and truck driver shortages, short sea shipping may be a viable concept if some of the cost challenges could be overcome.

A final issue for short sea shipping is that environmental evaluations are needed. In particular an air quality assessment is needed to determine if this concept is truly beneficial from an air quality perspective.

D. Short Haul Rail Intermodal Shuttle Services

Short haul rail intermodal shuttle services are a concept where international marine shipping containers are moved to or from a seaport to an "inland port" distribution site. These rail shuttle services have been proposed in major seaport market areas with distances from as short as 60 miles, to 300 miles or more, in both Northern and Southern California. They are of interest given their potential ability to reduce highway congestion around ports, improve safety by reducing truck movements, reduce roadway deterioration, energy consumption, and emissions, and to provide greater flexibility for shippers to both export and receive goods.

Typically, the break-even point between rail and truck movement of goods is 750 miles. Therefore, a combination of operational efficiencies and/or subsidies is required to make such services work. In addition, due to the growth of demand, California's Class I railroads (Union Pacific and the Burlington Northern Santa Fe) have been reluctant to offer or test such short-haul rail intermodal shuttle services, if such services could displace higher-yielding long-haul business. Thus, in order to make the economics work for a short-haul rail intermodal shuttle services, the following elements must be present:

- To be attractive to the railroads, the service must either offer a comparable profit margin that achieves some balance between profit and capacity used, and/or system capacity must be augmented. An ongoing subsidy may be necessary to manage, market and operate the service to close the gap between market-rate shuttle service fees (as compared to truck-only services), and shuttle service costs.

- There must be inland intermodal freight and transload facilities that can be easily accessed and serviced by rail and trucks, close to existing shipper operations (i.e., a freight/service nexus). The ability to transload or ship heavier weighted containers is a plus. To capture reasonable market share, such rail shuttle services must offer competitive time, cost, labor, reliability, and service advantages (either directly or indirectly) for shippers to use such services.

- Operation of night trains is crucial, as it would allow shippers extended freight delivery cutoff times, would cut conflicts with passenger services, and make it easier to load trains. To avoid delays and reliability issues, a minimum of switching must be achieved by having only one railroad providing through service, to or from port to terminal site.

A good example of a successful rail shuttle service and terminal is the Virginia Inland Port (VIP), sponsored by the Port of Virginia. The VIP offers a full range of shipper terminal services including U.S. Customs, on-site warehousing, transloading and freight handling, flexible operating hours and a chassis pool. The shuttle rail service is provided six days a week by the Norfolk Southern Railroad. The current facility is located 220 miles inland from the Port of Virginia, which is comprised of the Ports of Newport News, Norfolk International and Portsmouth Marine Terminals. As another example, Northwest Container (NC) has run a third-party rail shuttle service to and from the ports of Seattle and Tacoma, to the Port of Portland for a number of years. Its operational success relates to a streamlined operation run by NC, where all equipment is owned and loaded by NC subcontractors, with the railroad only providing mainline locomotive power and crews.

E. Land-use Decisions

The *California Transportation Plan 2025* cites three trends of land-use decision-making that have contributed to the current transportation difficulties impacting goods movement and Californians in general: 1) lack of coordination between local, regional and state transportation planners; 2) single use zoning that isolates housing, service, retail and employment; 3) low-density land-use (urban sprawl) and resulting in higher transportation infrastructure connectivity costs.[77] These trends resulted in a myriad of negative consequences such as longer commute times, increased reliance on fossil fuels, loss of habitat and open space, and decreased mobility. Important lessons can be derived from the land-use decision trends of the past and incorporated into a broader understanding of wise land use decisions and smart growth policies.

Goods movement corridors and facilities are incompatible with certain land-uses. California's goods movement system (primarily Southern California and the Bay Area) is located in close proximity to residential neighborhoods. This brings about a major source of contention due to the disparate characteristics between goods movement corridors/facilities and residential neighborhoods. It is widely known that goods movement operations and systems generate impacts on the surrounding communities and require mitigation. Furthermore, the urban location of California's main port facilities

[77] State of California. California Transportation Plan 2025. March 2004. Page 17.

makes new goods movement development very difficult as new and expanded corridors/facilities will come into conflict with adjacent land-uses. The problem posed by this conflict can be addressed with wise land-use decisions that adhere to principles of smart growth. Such principles are defined in the resolutions adopted in 1999 (HR 23 and SR 12) by the California Senate and Assembly:

- **Plan for the Future**: Preserve and enhance California's quality of life, ensure the wise and efficient use of our natural and financial resources, and make government more effective and accountable by reforming our systems of governance, planning, and public finance.

- **Promote Prosperous and Livable Communities**: Make existing communities vital and healthy places for all residents to live, work, obtain a quality education, and raise a family.

- **Provide Better Housing and Transportation Opportunities**: Provide efficient transportation alternatives and a range of housing choices affordable to all residents, without jeopardizing farmland, open space, wildlife habitat, and natural resources.

- **Conserve Open Space, Natural Resources, and the Environment**: Focus new development in existing communities and areas appropriately planned for growth while protecting air and water quality, conserving wildlife habitat, natural landscapes, floodplains and water recharge areas and providing green space for recreation and other amenities.

- **Protect California's Agricultural and Forest Landscapes**: Protect California's farm, range and forest lands from sprawl and the pressure to convert land for development.

As land-use planning is primarily a local function, it is crucial that local land-use policies be strengthened to ensure that incompatible uses (e.g., residential) do not encroach on goods movement facilities and corridors. Land-use decisions for goods movement corridors must be incorporated under these principles. Furthermore, land-use decisions on and around California's ports need to consider the importance of such factors as energy fuel infrastructure and truck parking facilities. Goods movement facility land-use decisions should: 1) consider the needs of all goods movement modes; 2) integrate community and environmental concerns to mitigate impacts; and 3) recognize the role that the California State Lands Commission has in the certification of leasing public lands.

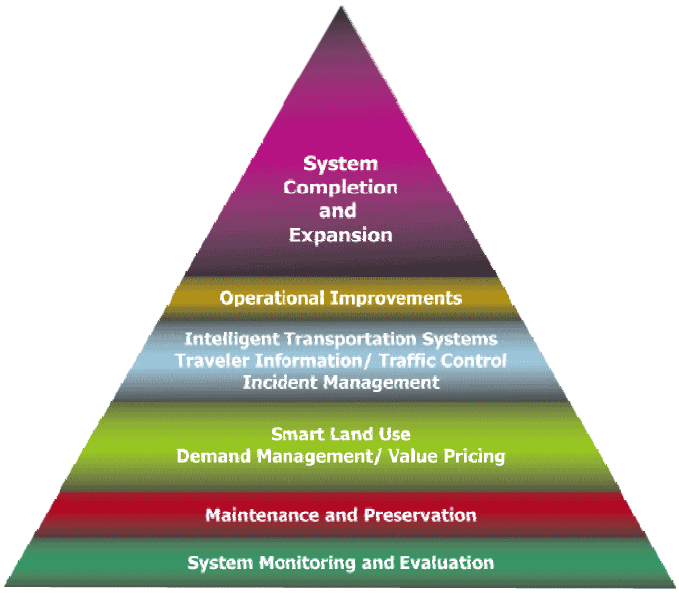
Land-use planning is a local government function. As noted in the *principles* (Chapter IV, Section A), it is important that land-use implications are considered in goods movement decisions. Likewise, goods movement implications should be considered in

land use decisions. The ARB *April 2005 Land Use Handbook*[78], the BTH *GoCalifornia* program, and other sources can aid local governments with such analyses. For example, providing adequate distance separation between receptors of pollution (e.g., residences, and schools) and sources of toxic air pollution (e.g., diesel particulate matter emissions) is an effective means of reducing public exposure to, and the health risks associated with, toxic air pollutants.

GoCalifornia promotes wise and integrated land-use decisions as part of California's overall strategy for mobility. Mobility is not only a factor of Californians' quality of life, it directly related to the velocity and throughput of the statewide goods movement system. Mobility will be a key consideration as the state optimizes its role in the maintenance and growth of a world-class goods movement industry.

[78] Available at: http://www.arb.ca.gov/ch/landuse.htm

Figure VIII-1: System Performance Improvement Pyramid



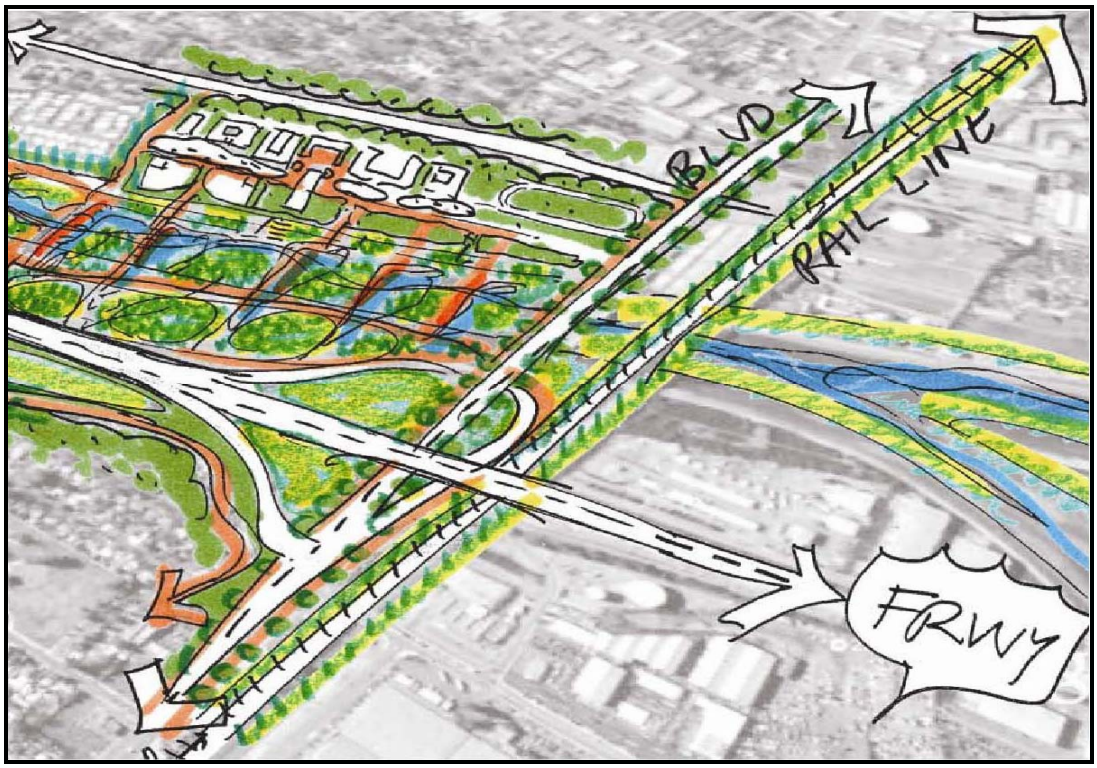
As the third tier of the *system performance improvement pyramid* (Figure VIII-1), smart land use is foundational to other infrastructure activity. Compact growth generates additional savings for state and local governments by managing the need for additional infrastructure and services. Synergistic benefits accrue by coordinating and focusing expenditures on existing infrastructure investments versus expansion. High density residential, coordinated commercial and retail development and major employers located along rail and transit lines are primary examples of the benefits of tying wise land use, compact growth, and modal enhancement to existing infrastructure.[79] This topic deserves further exploration and the state should investigate ways to encourage adherence to these guidelines.

A goods movement concept that embodies the principles of smart growth and employs wise land use decision making is the "Green Freight Corridor."[80] As part of the broader *Green Freight Initiative*, this concept emphasizes buffer zones between goods movement land uses and adjacent, non compatible land uses. For instance, a *green* freeway or rail corridor would be bordered by open space and habitat-restoring wetlands. Residential land uses then become adjacent to a compatible land use. A *green corridor* would be crossed by *green land bridges* rather than surface road overpasses in order to connect communities to regional trails and parks, thus encouraging pedestrian and bicycle traffic. The *Green Freight Corridor* is an example of the much needed innovative and creative

[79] From GoCalifornia PowerPoint Presentation 2005.
[80] From the Presentation: The GREEN Freight Initiative: A New Vision With New Values and a New Commitment. Prepared by: Southern California Leadership Council; LAEDC Center of Economic Development; Los Angeles County Economic Development Corporation; AECOM –DMJM Harris –EDAW. November 2005

approach to wise land use decisions and smart growth that will enable Californians to reap economic, environmental and community benefits.

Figure VIII-2: Green Corridor



F. Energy Efficiency of Goods Movement

There are two primary considerations of energy efficiency for a goods movement infrastructure project:

- Mode-specific energy/fuel consumption and;
- Aggregate energy/fuel consumption across a transportation network.

The first consideration of energy efficiency involves the measurement of fuel/energy consumption per mode of transportation. For instance: the amount of energy/fuel needed to move a ton of goods per mile by different modes of transportation. This evaluation is useful in determining whether to move a unit of freight by truck or rail across a given distance. For shippers and logistics planners this is part of a typical decision making process.

However, as a criterion for selecting infrastructure projects, this method of evaluation would not recognize the ancillary and secondary effects across a transportation network. Infrastructure projects that reduce congestion and minimize fluctuations in velocity would impact the energy efficiency of freight movement and non-freight traffic, thus achieving a wider spectrum of energy efficiency. For example, a grade separation project would allow freight movement by train to maintain a more consistent velocity and would have a secondary benefit by improving energy efficiency on non-goods movement transportation (mixed flow) by eliminating congestion at crossings at surface crossings. However, VMT-inducing impacts must also be considered.

Energy efficiency as a criterion for goods-movement infrastructure project selection should not be limited to comparing one mode against another (i.e. truck vs. rail). Rather, a broader understanding of energy efficiency should be utilized to capture secondary and system wide impacts on energy efficiency.

G. Education and the Environment Initiative

The Education and the Environment Initiative (EEI) mandates the development of a unified strategy to bring education about the environment into California's K-12 schools through California's Environmental Principles, Concepts, and a standards-aligned, Board of Education-approved model curriculum. It is essential that California's children understand environmental impacts and mitigation strategies – including environmental impacts from goods movement sources of pollution and the corresponding mitigation strategies.

IX. CONCLUSIONS

The State's economy and quality of life depend upon the efficient, safe delivery of goods to and from our ports and borders. At the same time, the public health and environmental impacts from goods movement activities must be reduced to ensure protection of public health. This Goods Movement Action Plan presents a Framework for Action that includes principles, criteria, metrics, and benchmarks for actions to improve infrastructure, to mitigate public health and environmental impacts, to mitigate community impacts, to develop jobs, and to improve public security and safety. It also includes Preliminary Candidate Actions in all these areas and key solution sets.

The overarching themes behind the principles for this plan are:

- Considering the four port-to-border corridors as one integrated system.
- Undertaking simultaneous and continuous improvement in infrastructure and public health and environmental impact mitigation and community impact mitigation.
- Pursuing excellence through technology, efficiency, and workforce development.
- Developing partnerships to advance goals.
- Promoting trust, providing for meaningful public participation, and ensuring environmental justice consistent with state law.

Expert stakeholders and the public, as part of a transparent process, have greatly enhanced the contributing agencies' ability to develop this plan.

APPENDIX A
GLOSSARY and ABBREVIATIONS

Bunker Fuel: A low-grade diesel fuel typically used to power ships.

Chassis: In shipping, a wheeled trailer or undercarriage on which containers are moved over the road

Criteria: Criteria are specific elements that help determine the relative merits of candidate projects and actions to achieve desired outcomes. (See below, 'metric', for a related term.)

Cross-Sectoral: Refers to impacts/vulnerabilities in one sector of the goods movement system that may affect other sectors.

Design-Build: Also known as "design-construct" or "single responsibility, design-build is a system of contracting under which one entity performs both architecture/engineering and construction under one single contract.[81]

Design-Sequencing Design-sequencing is defined as a method of contracting that enables the sequencing of design activities to permit each construction phase to commence when design for that phase is complete, instead of requiring design for the entire project to be completed before beginning construction.

Energy Efficiency of Goods Movement There are two primary considerations of energy efficiency for a goods movement infrastructure project.

1) Mode-specific energy/fuel consumption:
   - The amount of energy/fuel needed to move a ton of goods per mile by different modes of transportation.

2) Aggregate energy/fuel consumption across a transportation network:
   - Recognizes the ancillary and secondary effects across a transportation network. Infrastructure projects that reduce congestion and minimize fluctuations in velocity would impact the energy efficiency of freight movement and non-freight traffic, thus achieving a wider spectrum of energy efficiency.

Goods Movement: The processes and activities involved in the pickup, movement and delivery of goods (agricultural, consumer, and industrial products

[81] Definition from *Design-Build Institute of America.* Available online at http://www.dbia.org/

	and raw materials) from producers/points of origin to consumers/point of use or delivery. 'Goods movement' relies on a series of transportation, financial and information systems for this to occur, that involves an international, national, state, regional and local networks of producers and suppliers, carriers and representative agents from the private sector, the public sector (federal, state, regional and local governmental agencies), and the general public.
Green Equipment:	In goods movement, refers to equipment (such as locomotives, trucks, and cargo loading/unloading equipment at ports, rail yards, and truck terminals that utilizes emissions-reducing technologies. Existing fleets can be retrofitted with 'green' technologies that may be a cost-effective way to reduce sources of PM (particulate matter, see below) or NO_x (oxides of nitrogen, see below).
Green Goat:	Term used by the Burlington Northern Santa Fe railway to describe hybrid locomotives powered by batteries, with a small diesel engine for recharging the batteries and for providing additional power. Hybrid locomotives use less diesel fuel and produce fewer particulate emissions than conventional locomotives.
Infrastructure:	In goods movement, the system of roads, rail lines and yards, bridges, ports, airports and intelligent transportation systems that support the safe, efficient and effective movement of goods throughout the system. 'Infrastructure' in this context can also include the resources required to support goods movement, such as personnel, buildings, equipment, and logistical support.
Local Destination:	These are stores and factories that represent the final destination of cargo within an area typically served by trucks. For the Southern California ports, these destinations are stores and factories west of the Rocky Mountains. Cargo for the immediate region can be routed directly to the final destination or through a transload facility and/or warehouse. Cargo for more distant places will usually require the services of a transloader or warehouse in order to achieve cost savings from transferring cargo from marine containers into larger domestic trailers.
Local and Non-Local Origin:	For loaded containers origins are usually manufacturers that produce for export. Usually these westbound shipments do not involve intermediate handling or consolidation.
Marine Vessel:	The marine vessels calling at the Ports are owned (or leased) by global shipping companies. Container vessels operate on regularly scheduled services that call at a predetermined group of ports, normally on a weekly basis. The carrier operating the vessel

contracts with terminal operators for the use of their facilities and services for unloading, loading or temporary storage of goods.

Marine Terminal: The marine terminal is a facility designed to load and unload cargo on and off the marine vessels. Space within the terminal is also allocated for short-term storage of cargo and processing pick-up and delivery of cargo (by truck, rail, or marine vessel in the case of container cargo). At the Port of Long Beach, the marine terminals are built on Port-owned land and leased to private companies. The companies that lease terminals at the Port of Long Beach are usually global terminal operators or the terminal operating division of global shipping companies.

Metric: A standard of measurement. Refers to an objective standard against which outcomes can be measured and evaluated. (See above, 'criteria', for a related term.)

Mitigation: In goods movement, refers to the preventing, removing or alleviating the negative health and community impact effects of proposed, current, or past infrastructure projects and activities on adjacent communities and regions, as they affect (or produce) air quality, water quality, noise, solid waste, aesthetics, or other community physical or social resources.

Non-Local Destination: This destination may be a rail yard, warehouse, retail outlet, or manufacturer that is located east of the Rocky Mountains. Cargo headed for these areas may require additional handling at a transload facility and/or a warehouse prior to leaving the area by rail. Only a small portion of cargo destined for the Eastern States is trucked directly from the port's terminals.

NO_x: Nitrogen Oxide. Nitrogen oxides are typically created during engine combustion processes, and are major contributors to smog formation.

Near-Dock Rail Yard: Near-dock rail yards are rail yards located near ports and are dedicated to handling port cargo. Unlike on-dock rail yards, they serve more than one marine terminal and thus tend to be much larger than their on-dock counterpart. Trucks are used to move the containers between these facilities and the marine terminals. The close proximity to port operations usually eliminates the need to truck containers on regional highways. These yards are operated by railroads for the benefit of their customers (marine carriers and/or logistics companies). As with off-dock rail yards, the sorting and grouping of cargo needed to build trains is done within a near-dock rail yard.

Off-Dock Rail Yard: Off-dock rail yards are rail yards located within the region served by a port and handle port cargo as well as domestic cargo from other local sources. Cargo must be trucked from the marine terminals or local transload facilities to these yards, which are operated by the transcontinental railroads serving the local area. In Southern California, the major off-dock rail yards are located near downtown Los Angeles and east of Los Angeles to San Bernardino, meaning port cargo trucked to and from these facilities has moved on the regional freeway system. Cargo is sorted and grouped by final destination in these facilities.

On-Dock Rail Yard: On-dock rail yards are rail yards located within marine terminals. They receive imported cargo discharged from marine vessels as well as westbound trains arriving with exports. These facilities usually consist of rail tracks for loading and unloading trains and temporary storage of rail equipment and cargo, and a staging area for stockpiling containers. Marine terminals operate on-dock rail yards for the benefit of the carriers using the facility. Individual marine terminals may or may not have facilities for handling cargo via on-dock rail.

PM: Particulate Matter. Any material, except pure water, that exists in the solid or liquid state in the atmosphere. The size of particulate matter can vary from coarse, wind-blown dust particles to fine particle combustion products. Most of the focus in this plan is on PM with a particle size of 2.5 to 10 microns.

PierPass: PierPass is a program created by marine terminal operators to reduce congestion and improve air quality in and around the Ports of Los Angeles and Long Beach. This is accomplished by incentivizing shippers and receivers to have marine shipping containers picked up or dropped off during off-peak travel hours, including weekday evenings and weekends, and by funding the higher cost of evening and weekend terminal operations by charging a fee for container movement during peak travel hours.

Public Private Partnerships: Public private partnerships (PPPs) are arrangements between government and private sector entities for providing public infrastructure, facilities, and related services. Such partnerships are characterized by the sharing of investment, risk, responsibility and reward between the partners.[82]

[82] Definition adapted from "Public Private Partnership: A Guide for Local Government." British Columbia Ministry of Public Affairs. May 1999. Available online at http://www.mcaws.gov.bc.ca/lgd/pol_research/MAR/PPP/

Quay: A wharf used to unload cargo.

Regional Chassis Pool: A centralized, consolidated pool of chassis (see above) that reduces the need for individual truckers to own and maintain their own chassis. Regional chassis pools may be operated by ports (as in the Virginia Port Authority's regional chassis pool) or others; and may be a cost-effective mechanism to provide sufficient and up-to-date chassis capacity to the goods movement industry.

Reliability: In goods movement, the ability of the system to move a product (or vehicle) from point A to point B in a certain time every time. The less variability there is in that travel time, the more reliable that transportation system is considered.

Retirement: An air quality improvement strategy to reduce the number of older, higher-polluting trucks and other goods movement equipment that are operating in California. May involve incentives to owners.

Retrofit: In goods movement, an air quality improvement strategy to modify the engines and emission control systems of trucks and other equipment to produce lesser emissions.

Repower: In goods movement, the replacement of an older, more polluting diesel engines with a newer, less polluting types. It may also involve use of alternative fuel sources, such as liquid natural gas (LNG) or electric propulsion.

Sensors: An air quality monitoring tool. Sensors are placed at specific locations throughout a region or in an air quality monitoring 'hotspot' to monitor levels of various pollutants or other factors throughout the day and under various environmental conditions (such as temperature). The data may be used for various purposes, from establishing a pollution baseline, to developing evaluations of current emissions readings or traffic volumes.

Short Sea Shipping: Commercial waterborne transportation that does not transit an ocean. It is an alternative form of commercial transportation that utilizes inland and coastal waterways to move commercial freight from major domestic ports to its destination.

Sulfate: A salt or ester of sulfuric acid. (See below.)

Sulfur Oxides: Pungent, colorless gases (sulfates are solids) formed primarily by the combustion of sulfur-containing fossil fuels, especially coal

and petroleum products. Considered major air pollutants, sulfur oxides may impact human health and damage vegetation.

TEU: "Twenty-Foot Equivalent Unit," a standard linear measurement used in quantifying container traffic flows. As examples, one twenty-foot long container equals on TEU while one forty-foot container equals two TEUs.

Throughput: In goods movement, a measure of 'how much' cargo is moving through the system, measured in terms of volume of trucks, trains, or cargo. Generally, the goal is to increase throughput, by increasing the capacity of the transportation system, access to or from the system, by increasing its operating efficiency, and by reducing unnecessary restrictions.

Transload Facility: A transload facility is often the first stop for imported cargo that requires additional sorting and routing. Transload facilities can also process export cargo. Many of these facilities locate near ports where they can move the maximum amount of port cargo with the fewest number of trucks. At this stage, the contents of a marine container coming from the Port will be unloaded and transferred to one or more domestic containers or trailers for delivery to local stores and factories or to an off-dock rail yard. Transload facilities are operated by various kinds of companies, including truckers, warehouse operators, logistics companies, or even large retailers. In most cases, transload facilities will conduct "cross-dock" operations where the cargo is not stored at the location, or is stored for very short periods. Some operations will provide additional basic services like tagging or labeling cargo as it is sorted.

Velocity: In goods movement, a measure of 'how fast' cargo is moving through the system, measured in terms of average vehicle speed. Generally, the goal is to increase velocity, by the elimination of congestion bottlenecks and system gaps.

VOC: Volatile Organic Compounds (VOCs) are carbon-containing compounds that evaporate into the air (with a few exceptions). VOCs contribute to the formation of smog and/or may be toxic. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints.

Warehouse: Warehouses offer longer storage periods for cargo as well as additional processing and distribution services compared to transload facilities. As a result, they can be significantly larger than transload facilities. Warehouses are scattered throughout the

Los Angeles area, although clusters of warehouses can be found near the ports and along the major freeways. Warehouses, ranging widely in size up to one million or more square feet, can be independently owned or be parts of larger trucking and logistics companies.

Wheeled Storage: A method of container storage on a terminal where containers are left on chassis as opposed to container stacking.

APPENDIX B
TRANSPORTATION PROJECT PLANNING AND PROGRAMMING PROCESS

The following chart illustrates graphically the transportation project planning and programming process in California. The following defines some of the key steps and players in that process.

California Transportation Commission (CTC): The CTC is responsible for the programming and allocating of funds for the construction of highway, passenger rail and transit improvements throughout California.

California Transportation Plan (CTP): The CTP provides long-range (over twenty years) direction for planning, developing, and operating California's transportation system. The CTP is developed in collaboration with other state and local agencies, the federal government, members of the public, Tribal Governments and the private sector.

Interregional Transportation Improvement Program (ITIP): The Interregional Transportation Improvement Program (ITIP) is a five-year program developed by the Department of Transportation (Department) that programs funds for interregional projects that increase the capacity of the transportation system. The Department proposes 25 percent of STIP funding for interregional projects in the ITIP.

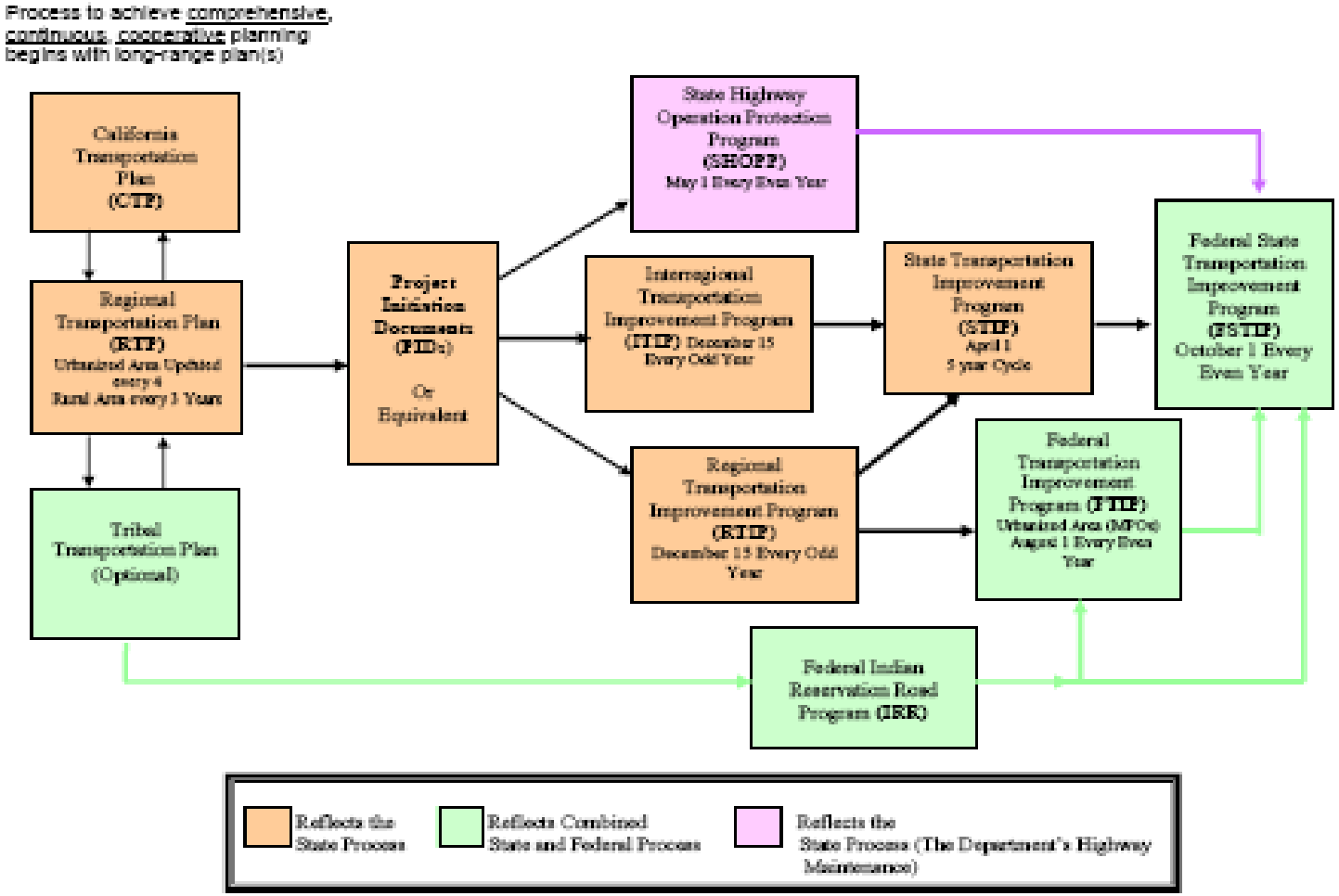
Regional Transportation Improvement Program (RTIP) The RTIP is a five-year plan identifying all the transportation projects for the region that are eligible for funding in the State Transportation Improvement Program (STIP). The Regional Transportation Planning Agencies (RTPAs), together with the County Transportation Commissions in Southern California, propose 75 percent of STIP funding for regional transportation projects in their RTIPs.

Regional Transportation Plan (RTP): The RTP, prepared by both Metropolitan Planning Organizations (MPOs) and RTPAs, is required by both State and federal law. It is designed to spell out, over 20 years, the policies, actions, and financial framework for the development of the region's transportation system, including highways, rail, maritime, and air, for both people and goods movement. It is intended to be the product of an integrated, statewide, multimodal, regional transportation planning process; that is based on a uniform regional transportation planning framework; and that involves the public in the transportation planning process that facilitates transportation decision-making without sacrificing equity or the environment.

State Highway Operations and Protection Plan (SHOPP): The Department develops the SHOPP, which includes projects to maintain the safety and integrity of the State highway system, such as road and bridge rehabilitation, traffic safety and operational improvements.

State Transportation Improvement Program (STIP): The State Transportation Improvement Program (STIP) is a five-year capital improvement program of transportation projects on and off the State Highway System, funded with revenues from the State Highway Account and other funding sources. The STIP is adopted by the California Transportation Commission (CTC) and reflects regional and statewide interests and project funding recommendations, as identified in the regions' RTIPs and in the State's ITIP.

State of California
Transportation Project Planning and Programming



APPENDIX C
Preliminary Working List of Candidate Projects
Trade Corridors and Goods Movement Infrastructure

The following is a preliminary working list of candidate trade corridor and goods movement infrastructure projects. These projects have been selected from a larger set of prospective projects. This preliminary working list is part of the transportation component of the Governor's Strategic Growth Plan which includes other statewide transportation projects aimed at congestion reduction. The projects listed below are illustrative. In other words, this an example list of priority projects that could be selected after applying the established criteria to a larger statewide need inventory. [Note:*Amounts in this column represent publicly committed funds. Many projects are candidates for public-private partnership funding as noted in the Project Status Comments column.]

Los Angeles/Inland Empire Corridor

Project Title/ Description	County/ Route or Sponsor	Location/ Post Mile	Immediate, Short, Intermediate Long Term	Cost (in millions)	Committed Public Funding (in millions)*	Funding Source	Primary Impact	Project Status Comments
Alameda Corridor State Route 47 Expressway (includes Schuyler Heim Bridge replacement)	Los Angeles 47	3.497 - 3.499	Short	420	246 10	SHOPP SAFETEA-LU earmark	Throughput, reliability	Environmental
Environmental Study: Interstate 710 Corridor Improvements (including dedicated truck lanes)	Los Angeles 710	4.960 - 24.627	Short	30	0		N/A	Study initiation pending funding identification
Gerald Desmond Bridge Replacement	Port of Long Beach		Short	800	16 100	TEA-21, SAFETEA-LU earmarks	Throughput, reliability	Environmental; Port/public funding option
BNSF "Southern California International Gateway" Near Dock Facility	Port of Los Angeles/ BNSF	Los Angeles, south of Sepulveda Blvd.	Short	176	0		Throughput	Environmental

Project Title/ Description	County/ Route or Sponsor	Location/ Post Mile	Immediate, Short, Intermediate Long Term	Cost (in millions)	Committed Public Funding (in millions)*	Funding Source	Primary Impact	Project Status Comments
Union Pacific Near Dock Intermodal Container Transfer Facility Completion	Ports of Los Angeles/ Long Beach/UP	Los Angeles, north of Sepulveda Blvd.	Short	100	0		Throughput	Planning; port/public/ private funding option
On-dock Rail Improvements	Port of Long Beach			379	0		Throughput	Planning, environmental; Port funding
On-dock Rail Improvements	Port of Los Angeles	Short		170	0		Throughput	Planning, environmental; Port funding
Alameda Corridor East - Grade Separations, Grade Crossing Improvements (Burlington Northern Santa Fe and Union Pacific lines)	Los Angeles, Orange, Riverside, San Bernardino	110 grade separations and 44 grade crossing improvements	Varies (short to intermediate term)	2,500	560 211	STIP, TCRP SAFETEA-LU earmarks	Environmental mitigation, safety	Seven projects in construction; 12 projects in design or right-of-way acquisition
Rail capacity improvements, including mitigation measures (e.g., completion of BNSF third main track, Fullerton to Los Angeles-$180 million)	Los Angeles, Orange, Riverside, San Bernardino	BNSF-San Bernardino Sub 143.1-165.5; 43.0-0.0; BNSF-Cajon Sub 73.9 - 55.9 UP Alhambra Sub 482.8-538.5; UP Los Angeles Sub 1.6 - 56.7	Varies (short to long term)	3,400	86	STIP	Throughput, velocity	$41 million under construction; Public/private funding option

Project Title/ Description	County/ Route or Sponsor	Location/ Post Mile	Immediate, Short, Intermediate Long Term	Cost (in millions)	Committed Public Funding (in millions)*	Funding Source	Primary Impact	Project Status Comments
Truck Lanes, SR 14 to Calgrove Blvd.	Los Angeles 5	R45.58-R49.03	Intermediate	60	2	SAFETEA-LU earmark	Throughput, velocity	
Colton Crossing BNSF/UP Rail Grade Separation	San Bernardino	UP-Yuma Sub 538.7	Intermediate	150	0		Reliability, safety	Project scoping study; Public/private funding option
Interstate 710 Corridor Improvements (including dedicated truck lanes)	Los Angeles 710	4.960-24.627	Long	2,171 (out of total $5,470)	8	SAFETEA-LU earmarks	Throughput, safety, reliability	
			TOTAL	**10,356**	**1,239**			

Bay Area Corridor

Hegenberger Road to I-980 Operational Improvements	Alameda 880		Short	20	0		Reliability, safety	
Reconstruction of 7th Street/Union Pacific Grade Separation	Port of Oakland		Short	100	0		Throughput, safety	Environmental Port/public funding option
Outer Harbor Intermodal Terminal	Port of Oakland		Short	88	0		Throughput	Planning Port/public funding option
I-80/I-680/SR 12 Interchange Improvements, Phase II	Solano 80/680/12	17.9-11	Short	140	11 31 17	STIP Local SAFETEA-LU earmark	Throughput, velocity	Project scoping
I-80/I-680/SR 12 Interchange Improvements, Phase III	Solano 80/680/12	17.9 - 11	Intermediate	100	50	Local	Throughput, velocity	Project scoping

I-80/I-680/SR 12 Interchange Improvements, Phase IV	Solano 80/680/12	17.9 - 11	Intermediate	466	0		Throughput, velocity	
			TOTAL	**914**	**109**			

Central Valley Corridor

Project Title/ Description	**County/ Route or Sponsor**	**Location/ Post Mile**	**Immediate, Short, Intermediate Long Term**	**Cost (in millions)**	**Committed Public Funding (in millions)***	**Funding Source**	**Primary Impact**	**Project Status Comments**
IMPORTANT NOTE: Listed below are the two main priorities of the State Route 99 Corridor Enhancement Master Plan/Business Plan Implementation. The complete list of projects will achieve system performance improvements in mobility, productivity, safety, and reliability. There are several potential projects from the I-5/SR 99 junction in Kern County to the Sacramento/San Joaquin County Line.								
Priority One: Freeway Conversion (e.g., SR 99 Freeway Conversion, Madera County Line to Buchanon Hollow Road)	Merced and Madera		Short to Intermediate	621	205	STIP	Throughput, velocity, safety	Preliminary Engineering, Environmental
Priority Two: Capacity Increasing Projects (e.g., SR 99 Widening, 4 to 6 lanes, Goshen to Kingsburg)	Kern, Tulare, Fresno, Madera, Merced, Stanislaus, and San Joaquin		Intermediate to short	2,626	125 15	STIP SAFETEA-LU earmarks	Throughput, velocity, safety	
			TOTAL	**3,247**	**345**			

San Diego/Border Corridor

SR 905 Six-Lane Freeway (from Mexico border/Otay Mesa Port of Entry to Interstate 805)	San Diego 905	5.2 - 11.6	Short	454	127 21 34 66 12	STIP TCRP Local TEA-21 SAFETEA-LU earmarks	Velocity	Design, ROW acquisition

[*Insert discussion of Border Improvement Plan*]			
TOTAL	**454**	**260**	

State Gateways and Central Coast

Project Title/ Description	County/ Route or Sponsor	Location/ Post Mile	Immediate, Short, Intermediate Long Term	Cost (in millions)	Committed Public Funding (in millions)*	Funding Source	Primary Impact	Project Status Comments
Central Corridor Double Track, Tunnels Modification	Union Pacific, Nevada, Placer		Short	29			Throughput	
TOTAL				**29**	**0**			

Four Corridor Total:

$1,953

$15,000

Abbreviations

BNSF: Burlington Northern Santa Fe Railroad
I: Interstate
SAFETEA-LU: Safe, Accountable, Flexible, Efficient, Transportation Equity Act-A Legacy for Users
SHOPP: State Highway Operations and Protection Program
SR: State Route
STIP: State Transportation Improvement Program
TEA-21: Transportation Efficiency Act for the 21st Century
TCRP: Transportation Congestion Relief Program
UP: Union Pacific Railroad

APPENDIX D
AIR RESOURCES BOARD EMISSION REDUCTION PLAN FOR PORTS AND GOODS MOVEMENT

THE EMISSION REDUCTION PLAN IS INCORPORATED HERE BY REFERENCE. THE EMISSION REDUCTION PLAN IS AVAILABLE IN ITS ENTIRETY AT:

http://www.arb.ca.gov/planning/gmerp/gmerp.htm