Appendix F: Freight Efficiency Working Group Papers

As part of developing the Action Plan, the State agencies solicited feedback from a broad range of stakeholders through a variety of engagement activities and outreach efforts. A component of this engagement was the development of the Freight Efficiency Strategies Development Group made up of freight experts from academia, industry, and government. The purpose and main task of this group was to produce a series of white papers that identify promising strategies for increasing the efficiency of the freight system. A series of six papers were developed over the course of six months. Each paper focuses on a specific theme for increasing freight efficiency within the larger freight system.

The content of the white papers produced by the group represents discussions among many individuals representing various freight industry stakeholders. It may not reflect consensus on the part of all of the participants, nor do these papers necessarily represent the official opinion or policy of the represented organizations, but rather a range of thinking that might be used to inform and build consensus for the development of the Action Plan. Given the perspective of the various freight stakeholders, paper authors attempted to include dissenting opinions and areas of concurrence where they exist. All information provided in the papers was considered by State agency staff when identifying potential actions for the Action Plan.

Abstracts for each paper are included below.

Topic #1: Funding for Freight Infrastructure and Clean Equipment
Lead Authors: Will Kempton and Garth Hopkins, California Transportation Commission

The white paper provides an overview of the need for additional funding for both continued development of California's freight infrastructure and expansion of clean equipment for freight. The paper advocates for the continuation of the successful Trade Corridors Improvement Fund and the Goods Movement Emission Reduction Program. As additional funding for freight improvements is identified, both Trade Corridors Improvement Fund and Goods Movement Emission Reduction Program should be continued under a new program titled "Trade Corridors Improvement Fund / Goods Movement Emission Reduction Program -Phase II". The white paper also lists suggested selection criteria and possible improvements for a new program.

Topic #2: Strategies to Maximize Asset Utilization in the California Freight System: Part I – Background and General Recommendations
Lead Author: Miguel Jaller, University of California, Davis

This paper (Part I of a two-part series) provides a brief overview of the freight system, with an emphasis on key stakeholders, their roles and interactions, and implications associated with the types of freight movements and layers of the

economy. The work discusses major inefficiencies in the on-road trucking and maritime sectors, where congestion often impedes maximizing asset utilization. The paper presents a number of general recommendations to improve freight efficiency, while specific strategies are discussed in the second part of this series. General recommendations include: conducting sound freight planning at all levels with emphasis on urban freight; identifying behaviors that need to be fostered, or mitigated, among the various stakeholders; developing participatory stakeholder engagement; fostering information sharing; developing plans, agreements and platforms for active conversation to address labor issues; investing in workforce development; and investing in research and continued improvement efforts. In addition, this paper acknowledges the fact that it is not likely that any single strategy will result in significant enough improvements on its own. The inherently complex nature of the system will require an equally complex set of solutions.

Topic #3: Strategies to Maximize Asset Utilization in the California Freight System: Part II – Strategies
Lead Author: Miguel Jaller, University of California, Davis

The freight system is multi-faceted and there could be a myriad of potential strategies; however, the paper focuses on those that could improve or help maximize asset utilization by fostering collaborative logistics practices and/or freight demand management. The strategies analyzed include: receiver-led consolidation; voluntary off-hour delivery programs; development of an integrated Chassis Pool of Pools; integrated system for dray services; load matching and maximizing capacity; improving Traffic Mitigation Fee programs; implementing advanced appointment and reservation systems; and relaxing vehicle size and weight restrictions. The paper discusses each strategy in terms of its nature (collaborative logistics or freight demand management); the geographic scope of the inefficiency or implementation; the expected benefits; level of implementation effort/time/cost; the primary stakeholders targeted; the stakeholders' role in the implementation/planning effort; the potential for unintended consequences; and barriers for implementation. The research shows that there is great variability in the level of data available (e.g., research reports, operational reports, implementation programs, pilot tests) to conduct detailed assessments, highlighting the need for additional efforts to be able to estimate the magnitude of the potential effects of each strategy to reduce inefficiencies (e.g., congestion/delays, environmental emissions, safety, and economic impacts, and costs, among others). However, stakeholder engagement during the research process allowed for a qualitative assessment based on empirical evidence from ongoing efforts.

Topic # 4: Planning and Policy
Lead Authors: Tom O'Brien, California State University, Long Beach

Increasing trade volumes at freight hubs and nodes, including seaports, airports, intermodal facilities, and border crossings, provide significant economic benefit but also social costs. Increased volume of trade creates jobs, generates State and local

tax revenue, and creates positive externalities. High trade volumes also impose costs, including vehicle congestion, collisions, environmental costs, and increased infrastructure development and maintenance and preservation costs. This white paper explores the ways that state departments of transportation can enhance their policy and planning efforts—and the outreach efforts that inform those processes—to better implement infrastructure, operational, and technology based modernization strategies to improve system productivity and efficiency.

Topic # 5: Operational Modernization at Distribution Nodes
Lead Authors: Tom O'Brien, California State University, Long Beach

This white paper identifies a range of technological and process-driven opportunities that hold the potential for modernizing distribution nodes to promote freight efficiency while also improving safety and air quality standards. To promote improved truck access at distribution nodes, the research investigated the use of truck platooning, virtual container yards, design-based guidelines, and weigh-in-motion strategies to improve freight efficiency. The research also explores strategies focused on establishing energy independence at marine terminals through use of energy microgrids.

Topic # 6: Information Technology
Lead Author: Genevieve Giuliano, University of Southern California

This white paper explores the potential to improve data and information systems, both public and private, to increase system efficiency. It presents recommendations for using information technology solutions to increase the efficiency of California's multimodal freight transport system. These recommendations resulted from a consensus-based process by working group committee members. The two challenges addressed were information problems in the freight transport supply chain and information problems in statewide trucking. Regarding the freight supply chain, recommended strategies include: accelerating and expanding the Freight Advanced Traveler Information System program; implementing ports-wide appointment systems at the State's major ports; and developing and implementing a transparent supply chain wide load tracking system. Regarding statewide trucking, recommendations included a statewide smart parking system; "push" freight information system; statewide freight information platform; border region information technology systems strategy; and freight focused traffic management.

The full white papers are available on the Action Plan website here: http://www.casustainablefreight.org/. Table F-1 summarizes recommended strategies from each of the white papers.

Table F-1. White Paper Recommended Strategies

WHITE PAPER TITLE	THEMES	STRATEGIES
Funding for Freight Infrastructure and Clean Equipment Lead Authors: Will Kempton and Garth Hopkins California Transportation Commission		I. All Federal and State freight funding administered by the State should continue using the successful TCIF model".
		II. Ensure TCIF/GMERP-Phase II Funds are Leveraged With Other Funding Sources
		III. Develop a Long-Term Funding Program Specifically for Freight Infrastructure and Clean Equipment
		IV. Build on the GMERP Program with the Dedication of Cap-And-Trade Funds for Freight Infrastructure and Clean Equipment Which Will Reduce Freight Emissions
		V. Minimize the Complexity of State Administered Freight Funding Programs
		VI. Improve Existing Access Infrastructure to California's Major Port Facilities
		VII. Underwrite Present Capital Expenses In Anticipation of Future Benefits
Maximizing Asset Utilization: General Recommendations Lead Author: Miguel Jaller University of California, Davis	**A. Cargo and Vehicle Movements** **B. Inefficiencies in the Freight System** **C. Key Stakeholders, their Roles and Interactions**	I. Hours of Service Rules – The State must consider the potential negative impact that the Hours of Service rules can have for freight efficiency, because the enforcement of the restart provisions of the Final Rule would introduce significant inefficiencies in the California Freight System.
		II. Driver Shortages – The State must consider labor shortages in the trucking industry (e.g. qualified truckers). Evaluate Workforce Development Strategies
		III. Conduct sound freight planning at all levels with emphasis on urban freight and strategic freight corridors
		IV. Planning efforts will allow identifying the types of freight behaviors that need to be fostered or mitigated among the various stakeholders.
		V. Participatory stakeholder engagement
		VI. Developing appropriate strategies requires insights and detailed analysis of how each supply chain operates.
		VII. Information sharing may not only be incentivized for planning purposes, but also to recognize the value of information as an input and output to operational processes. Information sharing may also involve active and dynamic freight data collection schemes.

Maximizing Asset Utilization: Strategies Lead Author: Miguel Jaller University of California, Davis	**A. Improving Performance of the Distribution Economy**	I. Voluntarily Off-Hour Deliveries (Demand Management): Research the effects and challenges of expanding off-hour delivery through incentive programs.
		II. Receiver-Led Consolidation (Collaborative Logistics): Research and develop incentive programs to foster the development of delivery (receiver-led) consolidation in urban areas.
		III. Freight Parking: Improve freight parking/loading/unloading area management and availability
	B. International Gateways	IV. Chassis Pool of Pools (C-PoP) Integrated System (CL): Work with stakeholders to support the design, development, and implementation of an integrated chassis pool system.
		V. Improving Traffic Mitigation Fee Programs (DM): Work with stakeholders to research information systems, develop pricing schemes, and develop common performance and efficiency indicators regarding Freight Demand Strategies.
		VI. Implement Advanced Appointment / Reservation Systems (DM): Research and assess the capability of flexible appointment systems to reduce congestion and improve efficiency at California ports.
		VII. Develop an integrated system for Drayage operations and Services (CL): Research and develop an integrated information system that is compatible with existing services such as FRATIS (Freight Advance Traffic Information System).
		VIII. (a). Reducing total transactions and Maximizing Capacity (CL): Support the planning and research of potential applications of load matching services.
		VIII (b). Reducing total transactions and Maximizing Capacity (CL): Research the development of an incentive program to increase the likelihood of matching or provide an information platform that decreases empty and non-revenue generating trips.
		IX. Relaxing vehicle size and weight limits (DM): Investigate the opportunity for increased truck size and length and identify corridors where it would be possible to lift current restrictions.
Planning and Policy Lead Author: Tom O'Brien – California State University, Long Beach	**A. Strategic Statewide and Interregional Freight Planning**	I. Freight Education: Form public-private partnerships to implement public education initiatives that communicate the importance of freight in compelling ways.
	B. Truck Routes and Integrated Corridor Management	II. Truck routes: Research the state's ability to provide information current local truck routes throughout the state to avoid adverse impacts to communities.
		III. Assessing national best practices: Look to other states for examples of their experiences with integrated corridor management, environmental streamlining, and data collection

Operational Modernization at Distribution Nodes Lead Author: Tom O'Brien California State University Long Beach	**A. Energy Efficiency at Marine Terminals**	I. Energy Efficiency at Marine Terminals: Use Smart Micro Grids to increase energy reliability at marine terminals and promote the use of alternative energy in the system. State may potentially need to regulate cost.
	B. Improved Truck Access at Nodes	II. Truck Platooning: Mitigate bottlenecks at ports through Truck Platooning to promote efficient use of roadways.
		III. Virtual Container Yards: Promote the use of virtual container yards to increase empty container interchange between importers and exporters; reduce the incidence of uncoordinated empty trips between import warehouses and ports.
	C. Design-based Guidelines	III. Intermodal facilities: Implement design based guidelines in order to consolidate deliveries across vendors and encourage the prevalence of intermodal freight facilities.
Information Technology Lead Author: Genevieve Guiliano University of Southern California	**A. Information Problems in the Goods Movement Supply Chain**	I. Accelerate and Expand the FRATIS Program: Establish public private partnerships that would integrate and manage freight movement and other data and provide operation and maintenance support to facilitate the establishment of FRATIS at a larger scale.
		II. Implement a system-wide appointments system at California's major seaports: research the feasibility of an appointment system for truck gate entries and dock transactions that is universal across all port terminals in a given complex.
		III. Design a fully transparent tracking system across the supply chain: Research the effects of tracking systems on load matching; trip predictability, and drayage turn times.
	B. Information Problems in Statewide Tracking	IV. Develop and Implement a statewide parking system and increase the supply of truck parking: Implement an action plan to integrate and expand truck parking reservation systems in the state.
		V. Develop and implement a "push" freight traffic information system: research feasibility of corridor specific traffic alerts designed for truckers.
		VI. Develop and implement a statewide freight information platform: Integrate state and regional truck route data and present it in an accessible format.
		VII. Implement the Border Region ITS Strategy
		VIII. Freight Focused Traffic Management: Develop and Implement freight priority traffic management in high volume truck corridors

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