

CALIFORNIA SUSTAINABLE FREIGHT ACTION PLAN



Governor Edmund G. Brown Jr.
July 2016

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California Sustainable Freight Action Plan

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PROGRAM WEBPAGE

For more information on the Action Plan and upcoming meetings, please see the program website at:

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This document is the outcome of extensive collaboration between many staff members from the California Department of Transportation, the Air Resources Board, the California Energy Commission, and the Governor's Office of Business and Economic Development. Publication of this document does not constitute the approval of any particular project, but is intended to outline broad policy objectives and potential strategies to achieve them. Any potential actions, projects, or funding will undergo subsequent public process. Mention of specific entities, trade names, or commercial products does not constitute approval, endorsement, or recommendations for use.

Contents

Executive Summary	1
I. California’s Freight Transport System in 2030 and Beyond	5
A. Current Policy Drivers	5
B. Vision and Guiding Principles.....	8
C. Freight Targets.....	10
II. Investing in California’s Freight Transport System.....	11
A. Potential Freight Funding.....	11
B. Approach to Ongoing Freight Investments.....	13
III. State Agency Actions and Pilot Projects.....	17
A. State Agency Actions.....	17
B. Pilot Projects.....	19
C. Discussion Concepts for Potential Future Action	20
IV. Process and Next Steps.....	21
Appendix A: Executive Order B-32-15.....	A-1
Appendix B: Freight Targets.....	B-1
Appendix C: State Agency Actions.....	C-1
Appendix D: Pilot Projects.....	D-1
Appendix E: Discussion Concepts for Potential Future Action.....	E-1
Appendix F: Freight Efficiency Working Group Papers.....	F-1
Appendix G: Background for Action Plan Development.....	G-1
Appendix H: Comments Received on the Draft Action Plan.....	H-1

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Executive Summary

In July 2015, Governor Brown issued Executive Order B-32-15 (see Appendix A), which provides a vision for California's transition to a more efficient, more economically competitive, and less polluting freight transport system. This transition of California's freight transport system is essential to supporting the State's economic development in coming decades while reducing harmful pollution affecting many California communities.

Improving the efficiency of California's freight transport system is vital to our State economy. Traditional routes of moving freight face increasing competition from across the globe, and California's system must anticipate and stay ahead of these changes. Currently, California is the nation's largest gateway for international trade and domestic commerce, with an interconnected system of ports, railroads, highways, and roads that allow freight from around the world to move throughout the State and nation. This system is responsible for one-third of the State's economic product and jobs, with freight-dependent industries accounting for over \$740 billion in gross domestic product and over 5 million jobs in 2014. However, California's freight transport system is under pressure to serve our growing population and satisfy dynamic market demands, while other locations in the United States (U.S.) and across the world are fiercely competing for this economic activity.

At the same time, modernizing California's freight transport system in a manner that improves safety and reduces pollution is essential to improve public health and meet our environmental imperatives. Freight transportation in California generates a high portion of local pollution in parts of the State with poor air quality. Reducing these harmful pollutants is an important local, regional, and State priority, as well as a matter of compliance with the federal Clean Air Act. California has also recently set new, aggressive targets for reducing greenhouse gas emissions 40 percent below 1990 levels by 2030 in order to combat climate change. Reducing emissions in the freight sector is critical to meeting these 2030 targets.

The objectives laid out in the Governor's Executive Order to improve efficiency and reduce pollution of the freight transport system are not new. California's freight transport system has already successfully undergone major improvements toward shared efficiency and environmental objectives. Proposition 1B, passed by voters in 2006, provided almost \$20 billion in funding for California's transportation infrastructure, with over \$2 billion dedicated to the improvement of the State's freight network and \$1 billion in funding for cleaner freight vehicles and equipment. Local and regional groups such as port commissions and metropolitan planning organizations are also taking action to improve freight operations. Large ports have adopted Clean Air Action Plans and many regional planning organizations have adopted regional freight plans that prioritize infrastructure improvements and

improve land use to better operationalize logistics activities in their region.

While California’s freight transport system has already undergone extensive modernization over the last several years and will continue to leverage improvements already completed and those underway, State government must take further action in close partnership with federal, regional, local, labor, business, and environmental and community-based leaders to achieve the next step in the evolution of the freight sector. We are already beginning to see technology advances in autonomous and connected vehicles, three-dimensional printers, and drones that change the realm of possibility for this system. The pace and timing of advances in technology must involve all stakeholders to determine how best to harness their environmental and community benefits, economic and job growth potential, and gains in system efficiency. Recognizing that the freight transport system is dynamic and continuously adjusting to meet ever-changing system demands, California must take hold of opportunities within this active system to help achieve the objectives in the Governor’s Executive Order.

This will involve strategic partnerships and well-planned investments around deployment of new technologies and major infrastructure upgrades. Near-term efforts must integrate new technologies that are commercially viable, help promising technologies become commercially viable through tools like purchase incentives and aggregated group purchasing, as well as provide supportive infrastructure upgrades. New federal funding for freight projects, the State budget, and other sources of revenue, present new opportunities for leveraging additional federal, State, local, and private investment for these freight transport system improvements.

State government must take further action in close partnership with federal, regional, local, labor, business, and environmental and community-based leaders to achieve the next step in the evolution of the freight sector.

At the same time, working with community partners who live and work near major freight corridors and facilities that have localized impacts will be vital to realize the “three e’s” of sustainability – environment, economy, and equity. State agencies recognize that it is essential to more effectively seek and integrate community input into development of freight air quality and energy strategies, as well as all stages of freight infrastructure and facility planning, including mitigation relative to future freight projects.

As a key first step, the Governor’s Executive Order directs the California State Transportation Agency, California Environmental Protection Agency, Natural Resources Agency, California Air Resources Board, California Department of Transportation, California Energy Commission, and Governor’s Office of Business and Economic Development to develop a California Sustainable Freight Action Plan (Action Plan), by July 2016. This Action Plan is an unprecedented effort, intended

to integrate investments, policies, and programs across several State agencies to help realize a singular vision for California's freight transport system. This Action Plan provides a recommendation on a high-level vision and broad direction to the Governor to consider for State agencies to utilize when developing specific investments, policies, and programs related to the freight transport system that serves our State's transportation, environmental, and economic interests.

This integrated approach will serve to coordinate State agency priorities and timing on actions to influence freight transportation and energy infrastructure, vehicle and equipment technologies, and facility and operations efficiency, rather than the traditional and separate planning efforts for transportation, environment, and energy. The Action Plan includes recommendations on:

- A long-term 2050 Vision and Guiding Principles for California's future freight transport system.
- Targets for 2030 to guide the State toward meeting the Vision.
- Opportunities to leverage State freight transport system investments.
- Actions to initiate over the next five years to make progress towards the Targets and the Vision.
- Pilot projects to achieve on-the-ground progress in the near-term.
- Additional concepts for further exploration and development, if viable.

The Action Plan is the beginning of a process, and signals State government's interest in collaborating with stakeholders on defining the actions necessary to make the vision for a sustainable freight transport system a reality. This Action Plan is not intended to replace other planning processes and documents such as the California Freight Mobility Plan or regional goods movement plans, but rather is intended to inform those efforts by providing a new perspective regarding the sustainability of the freight system and framework for ongoing collaborative processes. State agencies are committed to assessing the impacts of the Action Plan's recommended actions. Deeper analysis of certain actions can take place over time if and when the recommendations are being developed into specific proposals.

The Action Plan is the beginning of a process, and signals State government's interest in collaborating with stakeholders on defining the actions necessary to make the vision for a sustainable freight transport system a reality.

Moving forward, success will require government, industry, labor, and environmental and community leaders to stand together on this vision, as well as on a process to refine, build on, and prioritize actions that will attract needed funding (federal, State, local, private), and facilitate necessary legislative action.

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I. California's Freight Transport System in 2030 and Beyond

Executive Order B-32-15 (see Appendix A) identifies the need for a broader and more unified approach between State agencies and with stakeholders to improve the efficiency, transition to zero emission technologies, and increase the competitiveness of California's freight transport system. It also recognizes that a long-term outlook is necessary to plan for and develop a sustainable freight transport system. This section describes the current policy drivers, provides the State's Vision and Guiding Principles for a sustainable freight transport system, and Targets to track California's progress toward the Vision.

A. Current Policy Drivers

Challenges confronting policymakers in the freight transport sector are similar to those in the broader transportation sector generally, including how to modernize existing systems to support economic growth and ensure a healthy, livable environment. In response to this challenge, federal, State, regional, and local leaders need to more effectively partner with stakeholders including industry, labor, environmental and community-based organizations on devising broad strategies to ensure regions and the State can meet economic, environmental, public health, livability, and mobility goals in the era of climate change, and then aligning investments toward these objectives.

Executive Order B-32-15 emphasizes the need to accelerate California's transition to a more efficient and less polluting freight transport system. The objectives laid out in the Governor's Executive Order represent a continuation of the State's priorities on an array of transportation, environmental, energy, and economic goals and objectives.

- Preserving and enhancing freight infrastructure: Sustaining the roadway and bridge system in a state-of-good-repair as it ages to ensure proper preservation, enhancement, and maintenance into the future is critical to the smooth operation and reliability of the freight transport system. It is a challenge that will require dedicated and permanent funding necessary to ensure today's infrastructure is sufficient to meet the current and growing demands from modern and future freight equipment.
- Increasing system efficiency and capacity: Anticipated freight and population growth coupled with a reduction in available and compatible land near traffic-congested areas create the urgency to increase system capacity with limited room for infrastructure expansion.

Case Study

Freight Facility Modernization — San Pedro Bay Ports

Increased congestion and wait times are driving technological changes and expansions at the Ports of Los Angeles and Long Beach. Both Pasha and Long Beach Container Terminal have invested billions of dollars in advanced technology to improve efficiency, competitiveness, and air quality at west coast seaports. Some of the improvements include automated overhead cantilever cranes, deeper berths, expanded on-dock rail, a solar-powered microgrid, and zero and near-zero emission vehicles and cargo handling equipment. These changes will increase the capacity and throughput of terminals, reduce truck trips, and improve air quality near the ports. At the same time, these transitions in technology require targeted investments in job creation, retention, and training for skilled labor needed to operate and service modernizing facilities.

- Improving safety and security: Reducing freight-related injuries and fatalities remains of utmost importance requiring continuous improvement to accommodate current and anticipated future vehicles and technology. It is necessary to increase awareness, prevention, and protection while allowing commerce to flow.
- Reducing exposure to air toxics: Despite substantial progress over the last decade, the diesel equipment operating in and around freight hubs continues to be a significant source of air toxics that can cause localized risks of cancer and other adverse health effects. New health science tells us that infants and children are 1.5 to 3 times more sensitive to the harmful effects of exposure to air toxics than we previously understood, which heightens the need for further risk reduction.
- More protective air quality standards: The federal Clean Air Act requires the State and local air districts to prepare State Implementation Plans demonstrating how the State will attain the national 8-hour ozone and fine particulate matter standards, with plans due in 2016. Attaining the current standards for the 2023 to 2032 timeframes will require broad deployment of zero and near-zero emission technologies in the South Coast and San Joaquin Valley air basins. Currently, freight equipment accounts for about half of the statewide diesel particulate matter emissions, and approximately 45 percent of the statewide nitrogen oxides emissions. Emission reductions from the freight transport system need to be part of the solution.
- Climate change goals: In April 2015, Governor Brown signed Executive Order B-30-15 establishing a 2030 greenhouse gas emissions reduction target of 40 percent below 1990 levels, addressing the need for climate adaptation, and directing State government to:

- Incorporate climate change impacts into the State's Five-Year Infrastructure Plan.
- Update the State's comprehensive strategy for safeguarding against climate impacts.
- Factor climate change from a lifecycle perspective into State agency planning and investment decisions.
- Implement measures under existing agency and departmental authority to reduce greenhouse gas emissions.

Governor Brown further identified five key climate change strategy pillars for California to help achieve the 2030 emissions reduction target:

- Reducing petroleum use in cars and trucks by up to 50 percent.
- Increasing the amount of electricity derived from renewable sources to 50 percent.
- Doubling the efficiency savings achieved at existing buildings.
- Reducing emissions of short-lived climate pollutants.
- Managing natural and working lands so they can store carbon.

Meeting the targets and strategy pillars will require additional actions to decarbonize California's freight transport system. Currently, the system generates six percent of the State's greenhouse gas emissions, with total freight greenhouse gas emissions anticipated to increase without further action.

- Supporting economic competitiveness: The freight industry is a major economic engine for our State and supporting the competitiveness of the freight transport system will be key to the continuing prosperity of California.
- Workforce development: Freight-dependent industries are critical to supporting California's workforce, accounting for over 5 million jobs in 2014. A skilled and nimble workforce will be one key factor in competitiveness as firms continue to adjust to rapidly evolving markets. Expanding well-paid job opportunities in the trade sector will improve the State's overall economic health and support the transition to a sustainable freight transport system.
- Completing economic analysis: Assessing the impacts of actions, including the distribution of potential costs and benefits on California businesses, consumers, and the economy with public input is a critical part of the regulatory development process. Full economic impact analyses are required for all regulatory actions adopted by the Office of Administrative Law.

B. Vision and Guiding Principles

Affecting the future freight transport system in a way that supports meeting the State's multiple goals and objectives will take consistent, concentrated effort by both public and private interests over decades. To help frame this effort, the State agencies developed and recommend the following Vision statement and Guiding Principles for California's sustainable freight transport system. The intent of the Vision and Guiding Principles is to inform ongoing and future planning documents, project selection, and investment processes as they relate to the sustainability of the freight transport system.

Vision for a Sustainable Freight Transport System

Utilize a partnership of federal, State, regional, local, community, and industry stakeholders to move freight in California on a modern, safe, integrated, and resilient system that continues to support California's economy, jobs, and healthy, livable communities. Transporting freight reliably and efficiently by zero emission equipment everywhere feasible, and near-zero emission equipment powered by clean, low-carbon renewable fuels everywhere else.

Guiding Principles

In the coming years, the California freight system should achieve all of the following through public, industry, and stakeholder collaboration to make progress toward the long-term vision:

- Support local and regional efforts to improve trade facilities and corridors that achieve regional environmental, public health, transportation, and economic objectives consistent with statewide policy goals.
- Grow the economic competitiveness of California's freight sector.
- Grow the number of well-paying employment opportunities in the freight sector.
- Reduce freight-related deaths and injuries, and security threats.
- Reduce or eliminate health, safety, and quality of life impacts on communities that are disproportionately affected by operations at major freight corridors and facilities. This includes reducing toxic hot spots from freight sources and facilities, and ensuring continued net reductions in regional freight pollution.
- Improve the state-of-good-repair of the multi-modal freight transportation system.
- Invest strategically to improve travel time reliability and to achieve sustainable congestion reduction on key bottlenecks on primary trade corridors.
- Apply innovative and green technology, along with accompanying infrastructure and applicable practices, to optimize the efficiency of the freight transportation system.
- Invest strategically to accelerate the transition to zero and near-zero emission equipment powered by renewable energy sources, including supportive infrastructure.
- Improve system resilience by addressing infrastructure vulnerabilities associated with expected climate change impacts and natural disasters, which may include exploring opportunities to utilize natural systems to improve water quality, reduce ecosystem damage, prevent flooding, and create a cooling effect.
- Site freight projects to avoid greenfield development by enhancing existing freight infrastructure or targeting infill development near compatible land uses.

C. Freight Targets

Executive Order B-32-15 directed the State agencies to establish targets to improve freight efficiency, transition to zero emission technologies, and increase the competitiveness of California's freight transport system. Below are the Targets to meet this direction and track California's progress toward meeting the Vision and Guiding Principles. Measurable targets will help the State agencies evaluate and adapt implementation of the Action Plan over time. The Targets are not mandates, but rather aspirational measures of progress toward sustainability for the State to meet and try to exceed. The State agencies will measure and report progress on the following statewide Targets, and will evaluate the Targets to determine necessary adjustments in 2019.

System Efficiency Target

Improve freight system efficiency 25 percent by increasing the value of goods and services produced from the freight sector, relative to the amount of carbon that it produces by 2030.

Transition to Zero Emission Technology Target

Deploy over 100,000 freight vehicles and equipment capable of zero emission operation and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.

Increased Competitiveness and Economic Growth Targets

Establish a target or targets for increased State competitiveness and future economic growth within the freight and goods movement industry based on a suite of common-sense economic competitiveness and growth metrics and models developed by a working group comprised of economists, experts, and industry. These targets and tools will support flexibility, efficiency, investment, and best business practices through State policies and programs that create a positive environment for growing freight volumes and jobs, while working with industry to mitigate potential negative economic impacts. The targets and tools will also help evaluate the strategies proposed under the Action Plan to ensure consideration of the impacts of actions on economic growth and competitiveness throughout the development and implementation process.

See Appendix B for further discussion of the Targets.

II. Investing in California's Freight Transport System

Improving California's freight transport system is a smart investment, with benefits to the economy and environment, as demonstrated through the State's experience with the freight programs funded by Proposition 1B over the last decade. Through the \$3 billion Proposition 1B Trade Corridors Improvement Fund and Goods Movement Emission Reduction Program, the State was able to leverage over \$5.5 billion dollars from other sources to deliver over 90 transportation projects and more than 13,000 clean truck, locomotive, and marine vessel technology projects in California. The State's investment approach in these programs, committing a two to one dollar investment to freight corridor infrastructure and clean equipment, enabled it to simultaneously reduce harmful air pollution from freight-related activity and provide improvements to California's transportation infrastructure.

With the federal Fixing America's Surface Transportation Act providing a new source of freight funding for California's existing programs, and the Governor's current transportation funding proposal offering potential revenues for trade corridor investments, the State needs to build on the momentum of California's success in these earlier programs. By positioning itself to implement a similar magnitude of public and private partnering, significant benefits can be achieved for both public and private partners, as well as communities. Prudent public and private investments present the opportunity to move more freight faster and with less emissions, benefiting cargo owners, shippers, distributors, manufacturers, processors, and producers, while at the same time resulting in broader public benefits such as substantially reduced health and environmental impacts on local communities, and reduced greenhouse gas emissions. New public investments in the freight transport system should help a thriving freight based economy by supporting economic development and employment growth.

Ongoing public funding will be a fundamental need to advance progress towards meeting the Targets and Vision. The freight industry as a whole will need to continue to position itself through effective collaborative partnerships to attract new private sector, federal, State, and local agency investments. This can be accomplished by joining successful elements and procedures of past freight programs under Proposition 1B with new public freight funding and continuing to provide public support of private investment through avenues such as matching grants, financing assistance, and bulk purchasing power.

A. Potential Freight Funding

This section discusses new and proposed public freight funding source options for

new investments in California's freight transport system, both the infrastructure and the vehicles and equipment that move cargo. See Appendix G for additional details on the programs below and discussion of current freight funding programs.

1. Fixing America's Surface Transportation Act

On December 4, 2015, President Obama signed into law a new five year, \$305 billion surface transportation bill, the "Fixing America's Surface Transportation (FAST) Act," which authorizes funding for existing core highway and transit programs and created two new freight programs funded by the Highway Trust Fund. These include the National Highway Freight Program, from which California will receive an annual average of approximately \$117 million per year by formula, and the Nationally Significant Freight and Highway Projects Program that is funded at approximately \$900 million per year nationwide and subject to discretionary competitive awards. Prior to the FAST Act, the U.S. did not have a coordinated freight investment program. By establishing a dedicated, committed funding source, the FAST Act significantly advances public policy for freight and sends the underlying message to all of the importance of freight movement and freight supporting infrastructure to the California and U.S. economies.¹

2. Governor Brown's Funding Proposal

On January 7, 2016, the Governor released his proposed 10-year funding plan that will provide a total of \$36 billion for transportation, with an emphasis on repairing and maintaining the existing transportation infrastructure. The Governor's proposal also includes a significant commitment to improving infrastructure on the State's trade corridors, with approximately \$2 billion slated for freight infrastructure investments. The package includes a combination of new revenues, additional investments of Cap-and-Trade auction proceeds, accelerated loan repayments, the California Department of Transportation's (Caltrans) efficiencies and streamlined project delivery, accountability measures, and constitutional protections for the new revenues.²

The Governor's funding proposal also includes a one-year appropriation of funding for cleaner vehicles, equipment, and fuels used to transport passengers and freight, as well as off-road equipment used in agriculture and other applications.

As discussed in the Air Resources Board's (ARB) *Proposed 2016 State Strategy for the State Implementation Plan*, securing additional funding to support incentive-based and other innovative funding programs will be critical to achieve our air quality and climate goals, including the specific zero emission technology Target

¹ See <https://www.fhwa.dot.gov/fastact/legislation.cfm>.

² See Governor's Budget Summary 2016-2017, <http://www.ebudget.ca.gov/FullBudgetSummary.pdf>.

in this Action Plan.³ ARB is also working with its local partners to identify funding needs and mechanisms to support the scale of zero and near-zero emission mobile sources that is essential for attainment of federal air quality standards. The freight industry will continue to need incentives for early adopters of new technologies and to help accelerate the widespread transition to those technologies.

B. Approach to Ongoing Freight Investments

Building on the partnerships established in the course of developing this document, the State agencies must work together to achieve complementary goals to improve the effectiveness of freight-related funding programs and projects. All of the agencies involved in funding freight transport system improvements should promote the Action Plan goals by investing to support the State's economy and freight related jobs, seeking opportunities to promote clean fuels and transition to zero emission technologies, and investing in the State's critical freight infrastructure needs. In addition to statutory requirements, the Guiding Principles discussed earlier characterize priorities for future investments made by the State's freight funding programs. Keeping in mind the desire to leverage the broadest array of public and private financing available, additional coordination is necessary to meet the goals of individual agencies while achieving the Action Plan's Targets and Vision.

The Administration will seek to quickly direct existing freight money such as federal FAST Act funds to improve freight transportation infrastructure. For new ongoing State funds, the process of coordinating freight investments will best be facilitated by the creation of an integrated, statewide funding strategy. For this strategy to be successful, it must address the role played by all investors in the funding and financing of freight infrastructure and equipment. It must also include the

identification and support of measures that will maintain such funding and financing on an ongoing basis. Coordination between State agencies and local partners is paramount since there is a strong link between the issues of economy, infrastructure, energy, and air quality investments. The Administration's investments should invoke coordination between State agencies involved in development of the Action Plan, and the State should harness multi-agency collaboration where relevant.

In addition to statutory requirements, the Guiding Principles discussed earlier characterize priorities for future investments made by the State's freight funding programs.

³ See ARB Proposed 2016 State Strategy for the State Implementation Plan, May 2016, <http://www.arb.ca.gov/planning/sip/2016sip/2016statesip.pdf>.

One example of this coordination and possibility for expanding new freight funds is a second phase of the Trade Corridors Improvement Fund/Goods Movement Emission Reduction Program.

1. Trade Corridors Improvement Fund/Goods Movement Emission Reduction Program – Phase II

Building upon the successful model of Proposition 1B, Phase II of these programs could combine State and federal transportation funding to support the development of freight infrastructure and clean equipment projects that address the three goals of the Governor’s Executive Order B-32-15. As occurred during the previous Proposition 1B process, the Trade Corridors Improvement Fund/Goods Movement Emission Reduction Program-Phase II should improve the freight transport system through complementary programs that commit investments to freight corridor infrastructure and clean equipment simultaneously. The California Transportation Commission, in collaboration with Caltrans and regional planning agencies, would oversee Phase II of the Trade Corridors Improvement Fund and ARB would oversee Phase II of the Goods Movement Emission Reduction Program in coordination with local air districts. ARB and the California Transportation Commission should coordinate the two programs to maximize investments to the greatest extent possible.

Through ongoing collaboration between State, regional, and local governments, the freight industry, and communities, the State would establish criteria to evaluate projects proposed by local agencies and the State. The selection process should involve both a regional selection process and a State selection process to result in interregional and regional priority investments. Potential criteria for consideration include:

- Using performance-based criteria: Using both new and existing data and tools, California monitors both the performance of the State freight transportation network and projected emissions. Multiple metrics measure the effectiveness of State investment programs related to energy, fuels, and freight equipment. These performance targets should serve as a tool for evaluating the positive and negative impacts of freight infrastructure projects, especially as they relate to surrounding communities. They should also serve as a guide when California freight partners collaborate on funding decisions to ensure that investments support mutually desired outcomes, and allow for continued economic competitiveness and growth.
- Targeting National and State priority corridors: Community and roadway system impacts are concentrated more heavily on the freight corridors with the highest volumes. While acknowledging regional equity and the unique freight issues that rural areas face, focusing investments on the State’s primary trade corridors and the National Multimodal Freight Network will achieve the greatest benefit.

- Increasing freight system efficiency: Consistent with the Executive Order, the State's investments should include technologies and systems to improve the efficiency of freight operations at specific facilities and along freight corridors such that more cargo can be moved with less emissions. Funding should support innovations such as new technology, operational efficiencies, building multi-modal capacity with advanced technology into freight hubs (e.g. zero emission rail spur at major distribution center), and smart logistics projects that provide a business, transportation, and environmental benefit.
- Prioritization for zero and near-zero emissions: Zero and near-zero emissions equipment have the potential to greatly reduce impacts from freight on nearby communities and regional air quality, as well as climate change. Collaborative funding efforts moving forward should continue to focus on promoting the development and adoption of new, cleaner equipment and supporting infrastructure where technology is most viable and modernizes the system without stranded assets.
- Improving energy use in freight facilities: Reducing energy consumption at freight facilities makes strong business sense and can provide low cost options with short payback periods. Collaborative funding efforts should focus on incorporating energy resiliency through installation of renewable energy generation (e.g., photovoltaic systems) and micro grid deployments where technologies help improve the resiliency of freight facilities, are most viable, and include consideration of costs and benefits.
- Building new fuel and energy infrastructure: Providing low carbon, renewable fuels is critical to a sustainable freight transport system. Collaborative funding efforts should keep in mind the potential to add to the existing network of renewable fuels, electric charging capacity, and alternative energy production facilities. Funding efforts to support the production of alternative and renewable fuels should prioritize leveraging of existing infrastructure when possible. If no opportunities to improve existing infrastructure exist, then efforts should help develop needed additional energy capacity to support the expansion of alternative fuels.
- Utilization of existing transportation infrastructure: Collaborative funding efforts should seek to build upon critical investments already made by the State, regional and local governments, and private industry to better utilize system capacity and make freight transportation cleaner.
- Investing in sustainable communities: As a result of increased attention to sustainable communities in the State, funding should be directed to the extent possible to measures that support the realization of regional long-term greenhouse gas emissions goals in jurisdictions that have adopted rules, regulations, incentives, and operating agreements that will provide for higher levels of environmental and public health benefits.

- Reduce or eliminate air toxic hot spots: Collaborative funding efforts should also seek to avoid, reduce, or eliminate adverse localized impacts of freight projects on surrounding communities. Incorporation of mitigation measures developed in partnership with communities and consistency with existing community land use plans should be prioritized.

The positive aspects of the existing Trade Corridors Improvement Fund and Goods Movement Emission Reduction Program guidelines should be built upon to incorporate the Guiding Principles and listed Actions, and to provide a unified set of screening criteria that may be utilized by all parties investing public funds into the freight system.

III. State Agency Actions and Pilot Projects

All levels of government, industry, and stakeholders need to coordinate efforts to achieve the Targets and realize the Vision. Included in this Action Plan are recommended State agency Actions to support this effort over the next five years, as well as pilot projects to be further developed and considered for shared investment and implementation over the next three years.

In the immediate term, the State agencies directly involved in the development of this Action Plan, along with others, must continue building on the successful partnerships with the legislature, industry, labor, environmental and community groups, federal, regional and local partners. These partnerships have been instrumental to the success of the system so far, helping to develop and execute a combination of adopted Clean Air Action Plans and regional freight plans, regulations, and strategic investments. The Actions and pilot project concepts included in this section represent what is needed to help advance all of these essential elements to the next level.

To plan for the long-term, further consultation and partnership is necessary between State government, freight industry, regional, local, labor, and environmental and community partners who are thinking about the future of business and logistics in California. Achieving the Vision will require big ideas and forward thinking that anticipates how freight, consumers, and manufacturing will change into the future. New technology, infrastructure, and investment concepts must be identified, planned for, and implemented. As a starting place for discussion, this section also identifies transformational concepts for further exploration and potential future action.

A. State Agency Actions

The following State agency Actions are for consideration to support improvement of California's freight transport system over the next five years:

1. Work with the Legislature to enact a freight transport system funding package that enables new investment for transportation assets and advanced vehicles and equipment that move freight in California's freight corridors and is consistent with the long-term Vision and Guiding Principles presented in this document.
2. Work with the Legislature to enact legislation that enables distribution of federal Fixing America's Surface Transportation Act funds based on high-priority State and regional improvements to California's freight corridors as identified in transportation plans and programs.

3. Focus freight infrastructure planning and investments on providing modern freight corridors. Future freight planning and programming documents should identify high-priority projects with multiple benefits for future funding, and establish performance criteria.
4. Accelerate use of clean vehicle and equipment technologies and fuels for freight through targeted introduction of zero and near-zero emission technologies, and continued development of renewable fuels.
5. Convene a freight think tank of experts to provide insight into the demands on the future freight transport system and then identify the transformative technologies, solutions, partnerships, and critical steps to meet those demands, consistent with the Guiding Principles.
6. Convene industry stakeholder working groups to identify a target or targets and deploy strategies that consider commercial viability and promote the competitiveness of California's statewide and local freight transport system. Develop economic growth and competitiveness metrics, models, and other tools and data to analyze benefits and impacts of actions, including costs, and develop and implement a suite of quantitative metrics to track progress in order to ensure that the impacts of actions on economic growth and competitiveness are considered throughout the development and implementation process.
7. Work with the freight efficiency development group to refine its work to identify and deploy strategies to improve the efficiency of freight transport in California now and in the coming years, consistent with the objectives of this Action Plan.
8. Convene stakeholders and the California Workforce Development Board to identify and implement steps to ensure that the existing and future workforce meets the needs of the California sustainable freight transport system and sufficiently skilled labor is available to meet the needs of an expanding freight-related job market.
9. Develop a process involving federal, regional and local agencies, industry, environmental, and community stakeholders, to identify regulatory or permitting process improvements to expedite the delivery of projects identified as meeting the objectives of this plan, while upholding public participation and assessment of environmental, community, and health impacts as part of the process.

The State agencies anticipate beginning development of the above Actions for Board or Commission consideration (if applicable) through appropriate processes within the next five years. To the extent feasible, the State agencies considered planning and development timelines, developed associated implementation steps,

developed estimates of potential direct costs and benefits, and described impacted sectors for these actions in Appendix C.

B. Pilot Projects

The State agencies will also continue working with stakeholders to develop the following three freight pilot project concepts into shared investment opportunities within the next three years. The purpose of these projects will be to demonstrate on-the-ground progress toward a sustainable freight transport system in the near future. Successful demonstrations will serve as launching points for much broader application with the potential to address significant barriers and yield multiple benefits to California's freight transport system.

- Dairy Biomethane for Freight Vehicles (San Joaquin Valley): Work with State and local partners to advance a commercial-scale, dairy biogas sourced, biomethane fueling facility for use in freight and other vehicles. The pilot may focus on implementation of pipeline injection, and the construction of the fueling station.
- Advanced Technology for Truck Corridors (Southern California): Work with partners to promote new technologies that increase efficiencies and encourage zero and near-zero emission vehicles on primary freight corridors. Multiple partners can explore options for intelligent transportation systems, connected and semi-autonomous vehicles technologies, collaborative logistics, and potential incentives for zero and near-zero emission trucks. The pilot may focus on freight signal priority, traveler information systems, and communication systems infrastructure on arterial roads, as well as integrated corridor management on highways.
- Advanced Technology Corridors at Border Ports of Entry (California-Mexico Border): Work with partners to implement information technology management systems, innovative operation techniques, and enhanced traffic management technology. In addition, partner with federal and local stakeholders to incent zero and near-zero emission truck crossings at international ports of entry facilities. The pilot may focus on building capacity for technological means of traffic management, such as Bluetooth sensors in the roadway, Global Positioning System readers, variable messaging, and a specialized border wait time application.

See Appendix D for further discussion of these pilot project concepts.

Successful implementation of each project concept will depend on a number of factors, some within and others outside the control of the State agencies' collective efforts and authority. While the State agencies do not have designated funding for these projects and cannot guarantee eventual implementation of the pilot project concepts, the State Agencies are committed to convening focused efforts around

each concept toward that goal. The State agencies will continue to gather more details on the pilot project concepts described here. As the State agencies move forward, the pilot projects may change or be adjusted. Implementation of these pilot projects will also be conditional based on the successful completion of applicable public processes, identification of project funding through current funding options or new funding, and assessment of economic and environmental impacts.

C. Discussion Concepts for Potential Future Action

In addition to the Actions and pilot project concepts identified above, the State agencies also identified concepts for further exploration and potential future action. These concepts include complex, big picture ideas that are promising, but will require further discussion with experts and stakeholders to determine their feasibility for effective implementation. Concepts include further development of inland marine corridors, non-traditional transport methodologies, packaging optimization, supply chain consolidation in the agriculture industry, local sourcing for local markets, system efficiency improvements like receiver-led consolidation, full integration of chassis pool systems, virtual container yards, and load tracking systems, as well as a programmatic environmental review process to help accelerate freight project construction and operation.

Case Study

Connected Vehicle Technology — I-10 Connected Vehicle Corridor

Connected vehicle technology is a growing innovation that promises expanded capacity and improved vehicle and system efficiencies. Truck platooning allows trucks to virtually connect to one another to form a platoon. Studies show that when trucks platoon, there are a number of aerodynamic benefits realized through reduced drag and improvement of fuel efficiency. Peloton is one of several companies exploring the benefits of truck platooning. Their system uses an advanced cloud communication system to connect braking and acceleration between trucks. The lead truck can control both acceleration and braking of the entire connected platoon. The State is also working to deploy connected vehicle technology. The California Department of Transportation recently entered into a multi-state coalition with Texas and New Mexico to safely develop the Interstate 10 corridor as a connected vehicle corridor.

In addition, there are a few large transformational infrastructure projects either currently proposed or being discussed that could be critical to the development of a sustainable freight transport system: the Interstate 710 Corridor, the State Route 11/Otay Mesa East Port of Entry Projects, and Southern California On-dock Rail. These projects have the potential to provide lessons learned for future actions and a platform for innovative strategies. The State agencies will continue to track project developments and seek opportunities for partnership where appropriate.

See Appendix E for further discussion of these concepts and projects.

IV. Process and Next Steps

This document is an unprecedented step that builds on a strong foundation of research, technical, and stakeholder work. To develop this integrated State agency Action Plan, the State agencies considered technical and stakeholder work associated with the *California Freight Mobility Plan*, the *2014 Integrated Energy Policy Report Update*, the *Sustainable Freight Pathways to Zero and Near-Zero Emissions Discussion Document*, the *Heavy-Duty Technology and Fuels Assessments*, and the *Safeguarding California: Implementation Action Plans Report*. From July 2015 through spring 2016, the State agencies held a series of public workshops and webinars, regular meetings with the California Freight Advisory Committee, as well as numerous meetings with individuals and stakeholder groups such as industry associations, labor, environmental and community groups, California Native American Tribes, and small businesses.

The State agencies released a draft document for public comment on May 3, 2016, and collected comments on the draft through July 6, 2016. A broad range of stakeholders representing industry, regional and local government, labor, and community and environmental groups submitted over 85 comments on the draft Action Plan for consideration. Many of the comments submitted fit into a few major themes, requesting: continued development of work between the State and industry partners on data, metrics, and tools to help increase efficiency and competitiveness of the freight transport system; further commitment and prioritization by the State agencies to address localized community and health impacts in the State's infrastructure and regulatory programs; further clarification in the Action Plan on its role and relationship to existing State and regional plans, State funding activities, and regulatory development; as well as consideration of specific partnerships, technologies, and other concepts as the State agencies proceed with the identified State Agency Actions and supporting implementation steps. The Action Plan incorporates changes throughout the document and appendices to help address these comments and others, with key additions on:

- Next steps for convening and working with an industry stakeholder workgroup on a suite of metrics to support economic growth and competitiveness.
- Priorities for considering community concerns, with direction to avoid, reduce, or eliminate air toxic hot spots and adverse localized impacts of freight projects on surrounding communities.
- A new task to collaborate with stakeholders on developing a statewide, freight funding strategy to help support investments consistent with the long-term Vision and Guiding Principles presented in this document.

- Next step milestones and engagement opportunities to ensure continuity with our partners on Action Plan implementation.

All written comments received by the State agencies can be viewed at <http://www.casustainablefreight.org/>. See Appendix G for more detail on context, information considered, and public process for developing the Action Plan and Appendix H for a list of organizations that provided comments on the draft Action Plan.

Upcoming activities for the State agencies will include continued work with federal, State, industry, regional, local, labor, and environmental and community-based partners to inform, refine, and prioritize the strategies and actions identified in the Action Plan. The State agencies will seek to engage stakeholders through multiple forums, including: the formation of collaborative stakeholder working groups on competitiveness, system efficiency, workforce development, and regulatory and permitting process improvements, and continued engagement through each State agency's regular planning and regulatory development processes, as well as through periodic updates on implementation efforts at California Freight Advisory Committee meetings.

As the State agencies move forward gathering additional information and developing the Actions, pilot project, and other Action Plan concepts further, the concepts may change, be adjusted, or new concepts may be added. Implementation of the concepts will also be conditional based on the successful completion of applicable public processes, necessary financing approvals, technical analysis, and economic and environmental reviews. It is important to note that full economic impact analyses are required of regulatory actions developed by the Air Resources Board before the Board considers such actions.

The State agencies anticipate the following implementation milestones.

- Late summer 2016: The State agencies will host meetings of both the competitiveness and efficiency stakeholder workgroups.
- September 2016: The State agencies will discuss Action Plan implementation at a meeting of the California Freight Advisory Committee, and anticipate providing additional periodic updates at future California Freight Advisory Committee meetings.
- By January 2017: The State agencies will work on actions to enact a freight transport funding package and distribute federal Fixing America's Surface Transportation Act funds dedicated to addressing key State and regional improvements to freight corridors in California.

- By January 2017: Initiate work to collaborate with industry, regional and local agencies, and others on developing a statewide funding strategy to help support investments in transportation assets and advanced vehicles and equipment consistent with the long-term Vision and Guiding Principles presented in this document.
- Early 2017: The State agencies will host a meeting of the sustainable freight think tank.
- By July 2017: The State agencies will establish work plans for the workgroups on competitiveness, system efficiency, workforce development, and regulatory and permitting process improvements. For pilot projects, the State agencies will prepare work plans for the three project concepts identifying scope, partners, timelines, and funding options.
- By July 2018: The State agencies anticipate providing a full progress report on Action Plan efforts.
- By 2019: The State agencies will evaluate the Action Plan Targets to determine if adjustments are needed.
- By 2019: Statute requires Caltrans to have completed an update of the 2014 *California Freight Mobility Plan*.

Moving forward, the State agencies will also develop ad hoc groups and hold additional stakeholder meetings as necessary to discuss other issues that develop during the Action Plan implementation process.

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