GHG Emission Reduction through Personalized Truck Information and Planner System (P-TIPS)

Prepared for:
California Air Resources Board

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Summary

Stantec Consulting, Inc. (Stantec) is pleased to submit this trade corridor pilot idea in response to the California Sustainable Freight Action Plan mandate. Stantec has been at the forefront of building innovative solutions to address California's complex transportation challenges including freight movement. Furthermore we have developed a highly successful program management practice that can help California Air Resources Board (CARB) and its partner agencies in meeting their ambitious emission, environmental and economic objectives. You will further benefit from our deep and wide relationships with technology companies which will enable us to leverage best-of-breed solutions to meet your needs.

As the Program Manager for the Contra Costa Transportation Authority (CCTA), we are uniquely positioned to collaborate with them and other public agencies to streamline the process and build on the important lessons learned. We are also excited to work with Randell Iwasaki, CCTA Chief Executive Officer who has immense knowledge and expertise in all facets of California transportation with both public and private sectors. Randy is a visionary leader with an extensive track record in implementing innovative technology solutions to address California's transportation needs. Furthermore, as Chairman of the USDOT's National Freight Advisory Committee (NFAC) Randy will be an extremely valuable resource whom we can collaborate with to ensure alignment with national freight policies. We are confident that through our technology expertise, government and industry relationships, and program management services California will lead the nation in creating the model 21st Century trade corridor infrastructure and systems.

With 22 offices throughout California and extensive experience working with various governmental agencies (State, Regional and Local) and technology companies Stantec is well-positioned to ensure a successful initial pilot followed by comprehensive program management services to successfully scale and adapt the pilot throughout the state freight network.

1. Name and Contact Information

Arya Rohani will be Stantec's point of contact and program manager. He has over 30 years' experience in program management and working with California public agencies managing complex transportation projects -- as well as over 12 years with Cisco Systems where he was responsible for building advanced technology solutions that are highly relevant to our proposed pilot. He will therefore bring both public and private sector perspectives to this important undertaking. Arya's contact information is:

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2. Project Title

GHG Emission Reduction through Personalized Truck Information and Planner System (P-TIPS)

3. Location of Project

Interstate 580 (I-580) is an 80-mile east-west interstate highway in Northern California. This heavily traveled corridor includes significant truck traffic and runs from the I-580/I-80 Interchange in the San Francisco Bay Area/Port of Oakland to the I-580/I-5 Interchange near City of Tracy in Central Valley

(Figure 1). This important corridor provides highway access between San Francisco and Los Angeles since I-5 runs east of the Bay Area and south toward Los Angeles.

Figure 1: Highway Freight Network Tiers, Northern California. Source: Caltrans

4. Concise two paragraph executive summary of project

Over 55 million tons of freight moves across our nation every day and California has one of the largest shares due to its sheer size and economic might. Freight transportation makes our economy and quality of life strong in California as the eighth largest economy in the world. Although we are proud of the transportation network that we built and it is fundamental to our well-being, we must reduce GHG emissions significantly, reduce truck idling and terminal queuing (California law requires trucks to idle or queue for no more than 30 minutes outside port terminals), improve travel time predictability, improve trip reliability and reduce the number of truck incidents -- all in order to make California remain competitive globally in the 21st century.

It is estimated that truck idling contributes to 13 million hours of delay, 37 metric tons of GHG emissions and approximately $1 billion loss in productivity annually in California. The Stantec team, in collaboration with key public agencies and private sector entities proposes a comprehensive program to reduce GHS emissions by utilizing Personalized Truck Information and Planner System (P-TIPS) and state of the art technologies. Our proposed pilot project will use advanced software, communications and analytics technologies in concert with proven Intelligent Transportation Systems (ITS) strategies to ensure truck drivers are provided relevant, timely and tailored information so that they can optimize their route planning and truck stop parking while having the necessary tools to react to unpredictable events that may impact their safe and timely pick-up, transit and delivery operations. Through our advanced technology experts and transportation professionals we will work with the best-of-breed technology providers to ensure CARB and its partner agencies attain the most cost effective solutions to ensure safe and efficient freight movement while significantly reducing GHG emissions. This includes

providing truck drivers and freight companies with real-time and actionable intelligence on the transportation network conditions so that they can optimize their trips, reduce GHG emissions, reduce incidents, and ensure efficient operations for the benefit of economic vitality.

5. Detailed description of how the pilot project idea components will incorporate advanced technologies, alternative fuels, freight and fuel infrastructure, and local economic development; and advance goals of improving freight efficiency, transitioning to zero-emission technologies, and increasing competitiveness of California's freight system.

We propose to develop and implement this program in two phases:

PHASE I includes the performance of the following activities. We will prepare a detail scope of services in next phase of the process with clear and concise Work Breakdown Structure (WBS). The following is a brief summary of tasks:

Task 1 - Data Collection - We would assemble from existing resources all possible information about California freight corridors including truck driver information and surveys along with all truck parking facilities (private and public).

Task 2 – Program Planning - This includes the development of the program strategic plan, funding plan, program management plan (PMP) and contingency planning.

Task 3 – Key Stakeholders Plan - This includes identification of all potential partners in private and public sectors and key participants.

Task 4 – Program Development – This includes development of multi-year sustainable deployment and implementation plan to ensure ongoing operation and maintenance (O&M).

Task 5 – Development of Concept of Operations (ConOps) – This will identify and evaluate characteristics of the proposed system from the viewpoint of ALL key stakeholders including those who will use that system and how the system will be operated and maintained.

Task 6 – Development of System Engineering Management Plan (SEMP) – Includes the definition of the systems engineering portion of the project, how it will be organized, structured and conducted and how the total engineering process will be controlled to provide technology solutions that fulfill the requirements established earlier.

Task 7 – Development of Technology Solution Packages – This includes, but will not be limited to the following:

- Development of Decision Support System (DSS)
- Development of predictive travel model (specifically for truckers)
- Development of customized trip planner applications
- Customized traveler information system applications with GUIs
- Parking availability reservation system
- Development of idle reduction systems including GHG monitoring system

- Advanced Traveler Information System (ATIS) including Variable Message Signs (VMS) including real time travel information
- Real-time traveler information at point of entries with best time use of highway applications
- Development of Heads-Up Display (HUD) technologies with specific application for truckers
- Dynamic queue warning systems
- Development of wireless truck inspection
- Development of web applications for shippers and receivers
- Development of Truck data analytics for truck companies and public agencies (operators, ports, etc.)

Task 8 – Development of Key Performance Indicators (KPI) - Including but not limited to travel delay reduction, emission reduction, crashes and accident reduction, economic development with the goal of reducing GHG.

Task 9 – Implementation of Detailed Pilot Program - This will include system testing, evaluation and acceptance of the pilot project with the objective of scaling it statewide to cover all key freight corridors in California.

Task 10 – **System Evaluation –** Leverage data collected before and during the pilot project to evaluate system performance from multiple perspectives.

PHASE II: Upon completion of Phase-I and complete acceptance of the ConOps, SEMP and successful implementation of the P-TIPS pilot deployment project, the Stantec team will implement and deploy the same model to ALL truck corridors with over 8500 trucks per day in California in collaboration and coordination with ALL key stakeholders.

6. Estimated cost for implementation and existing funding commitments (include any funding limitations or constraints) by stakeholder and amount.

The estimated cost for this pilot project for Phase I is approximately $3 million. This includes the tasks identified in Item 5 above. We understand there are no funds available in the current State Transportation Improvement Program (STIP), however, we believe that the P-TIPS pilot project is a strong candidate for California's Cap and Trade funding program. In addition there are other sources of public and private sector funding which Stantec has successfully leveraged on previous programs. We have the know-how and relationships to develop projects with a high degree of success in attracting funding from traditional and innovative sources. Phase II is estimated to cost about $50 million.

7. Timeline

The proposed P-TIPS pilot project will be implemented using proven program management practices and in a highly structured environment crucial for success of any technology project:

Tasks	Timeline*
1. Data Collection	Ongoing
2. Program Planning	1 Month
3. Key Stakeholders Plan	1 Month
4. Program Development	2-4 Months
5. Development of Concept of Operations (ConOps)	2-4 Months
6. Development of System Engineering Management Plan (SEMP)	2-4 Months
7. Development of Technology Solution Packages	2 Months
8. Development of Key Performance Indicators (KPIs)	2 Months
9. Implementation of Detailed Pilot Program	4 Months
10.System Evaluation	2 Months
Total	**2 Years***

* Final project schedule to be determined in collaboration with CARB and its partner agencies.

8. Means for measuring progress toward meeting goals over time

The Stantec Team will institute a rigorous pilot project evaluation approach that will be embedded in every step of our implementation process. This includes data collection from a variety of sources to establish their specific travel experience (travel time, parking, idling in traffic, fuel usage, etc.). The ultimate goal of this task is to evaluate pilot project effectiveness by performing the following:

- Measure Greenhouse Gas emission levels
- Measure Truck Travel Times and Predictability of Travel Planning
- Measure Truck Travel Shift from Peak to Off-Peak Hours
- Measure Operations Optimization with Ports and Major Shippers
- Measure Economic Development Benefits (this KPI will be developed in collaboration with economic development organizations in California at the outset of the project

9. Description of the potential roles each of the interagency partners could provide to support the project's implementation

CARB and its interagency partners will play a crucial role in the identification and implementation of final pilot project details. Stantec has worked extensively with many of the agencies involved and thoroughly understands their mission and objectives. To further bolster our team's capabilities in this area we will work closely with CCTA and its CEO Randell Iwasaki. As previously stated in the Summary section Randy has an incredibly successful track record of implementing technology projects at Caltrans and CCTA, has excellent relationships w/public agencies throughout California, and currently serves as the Chairman of USDOT's National Freight Advisory Committee (NFAC).

Stantec's rich portfolio of transportation and technology accomplishments and our close collaboration with Randy and CCTA offer a compelling choice for CARB in selecting a team with a deep understanding of California's trade corridors, transportation funding and public/private partnerships required for success. We view this opportunity as a model which will help shape the future of California's environment and economy for many years to come.