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August 7, 2015

Re: Siemens Industries Inc. comments for CARB symposium to discuss California's goal of cutting petroleum use in half by 2030

To Whom It May Concern:

California is leading the US and the world in a transformation of the transportation sector. The results are encouraging on the passenger transport side, where a trend towards decreasing fuel consumption and emissions is visible. For freight transport the picture is much more worrying and Siemens Industries Inc. wishes to encourage California to give high priority to implementing solutions that enable renewable energy, such as decarbonized electricity, to achieve a similar shift in freight emissions as has been achieved for passenger transport.

The challenge of freight emissions goes beyond the current consumption. ARB's most recent forecast show GHG emissions from trucks going from about 20 million metric tons (MMT) CO_2e in 2012 to nearly 35 MMT CO_2e in 2050. [1] Those numbers are not considering the recently issued federal Phase 2 GHG rules, but even so, the targeted 24% reduction in fuel consumption and emissions will be insufficient to halt the rise in emissions. Much less achieve reductions on the scale called for.

The same is true on a national level. While Light-duty vehicles are forecast to cut their CO_2e emissions from 1,035 to 777 MMT p.a., freight trucks are forecasted to grow from 356 to 477 MMT between 2012 and 2040. [2] Globally, GHG emissions from heavy-duty vehicles are growing rapidly and are expected to surpass emissions from passenger vehicles by 2030. [3] Avoiding road transport and shifting freight to other modes, such as upgrade rails systems, may plan an important role. However, road freight is anticipated to remain a large and vital port of the transport system.

To achieve the goals of cutting petroleum use by 50% and GHG by 40% by 2030, as well as being on the way to 80% reductions in GHG by 2050, it is therefore imperative that emissions from freight trucks are put on a path towards zero emissions. Strong zero emission goals are also important in giving California's air quality-focused businesses the certainty they need for long-term planning. This is necessary both for technology users and for the companies developing solutions when they make investment decisions.

Bio-fuels produced in an environmentally sustainable way are not going to have sufficient scale to address this challenge. The recent ARB Heavy Duty Technology and Fuel Assessment states that bio-fuels "may not be able to supply the project fuel demand" and shows a chart from a UC Davis report estimating that by 2030 approximately 3 billion gallons gasoline equivalent (BGGE) being the likely supply compared with the estimated fuel demand of nearly 24 BGGE.

Given the goal of California to generate 50% of electricity from renewable sources, as well as federal plans for decarbonizing power generation, it makes sense to find efficient ways to make this clean

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energy available to heavy duty trucks. Electromobility offers a variety of benefits, including improved local air quality and increased energy efficiency, which lowers operating costs.
The main obstacle to electrified road freight has been the size and weight required for on-board storage of electrical energy. For example, a road truck weighing 40 tons travelling 600 miles would need approximately 20 tons of batteries. This problem can be solved by providing power to the truck as it is driving.

Electric Road Systems (ERS) that achieve this are of broad interest to environmental NGO's, road operators as well as truck manufactures, as evidenced at a recent event during the International Transportation Forum in Germany [5].

The technical solutions are also being demonstrated on public roads. The Swedish Transport Administration announced two demonstration projects in June this year [6]. In Germany, Siemens is already operating a private road test track [7]. The Germany authorities and ministries have done detailed assessments of the technical feasibility as well as economic and environmental benefits. Their conclusion led the cabinet of the German federal government to approve plans of a field trial of the system. [8] [9]

Independent reports also confirm the economic and environmental benefits of a catenary solution in California. [10]. This led the South Coast Air Quality Management District to commission a project near the ports of Los Angeles and Long Beach. Construction of the project involves vehicles of several different trucks, one of which is being provided in collaboration with Mack. The goal of the project is to collect data from operations and evaluate the benefits of such a system, especially for intensely used road freight operations connecting the nearby ports with local rail yards and logistics centers.
Much of California's road freight is concentrated to freight corridors, be it the I-710 in Los Angeles or the I-5 and Highway 99 which form the backbone of California's road network. Instead of seeing this as a nearly insurmountable challenge, it could be seen as golden opportunity.

Siemens welcomes the focus by the Governor and the leading agencies, CalSTA, CalTrans and ARB in developing strategies that will reduce road freight GHG emissions. It would be our pleasure to have continued interactions in the coming months to further our collaboration on helping California maintain its status as an innovative and green role model.

Sincerely,

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