SkyTran™

California Energy Commssion
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12-EPIC-01
TN # 66823
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August 17, 2012

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 12-EPIC-01
1516 Ninth Street
Sacramento, CA 95814-5512

Dear Commissioners,

We encourage EPIC to consider including Advanced Transportation Systems in the EPIC program. The inclusion of clean transportation in the program is a step in the right direction; however, we hope that the definition is not biased to simply those modes with four tires and a steering wheel. Expanding the definition to include new automated electric vehicle systems in development would help promote numerous EPIC goals: decreased GHG, improved grid stability/efficiency, increased penetration of renewables, and reduced energy use for transport.

To that end, SkyTran Inc. proposes the demonstration of an automated electric vehicle (AEV) technology that demonstrates the potential of a Zero Net Energy transportation system. The system consists of suspended AEV's transiting an aerial guideway covered with flexible photovoltaics (PV). Guideway PV is projected to provide up to 1/3 of required power to operate vehicles at maximum system capacity. The guideway is designed to accommodate the Universal Infrastructure Backbone™ (UIB). The UIB integrates solar power production, high voltage power transmission, and aerial utilities (cable, telephone, local power distribution) by consolidating them into a slim, aesthetic guideway structure. The UIB provides electric vehicle charging opportunities at AEV park and ride stations and supports grid integration by absorbing energy from AEV decelerations. SkyTran's AEV system has multiple societal benefits including; 1) dramatic reductions in GHG and other emissions; 2) innovative powertrain that uses ½ the energy of a conventional EV (120 Wh per mile); 3) substantial source of locally generated solar power on a minimal footprint; 4) mid-day peak sun PV grid support between rush hours; 5) the creation of an attractive public transit alternative resulting in a reduction of VMT; 6) job creation and economic development in California related to manufacture and installation. Furthermore, the AEV system is connected to the existing grid via a BiDirectional Converter (BDC) at each park and ride station, the BDC provides rapid dynamic reactive power to stabilize grid voltage so that increased renewable penetration can be achieved in the neighborhoods where the AEV is sited to promote achievement of high-penetration PV goals set by the state.

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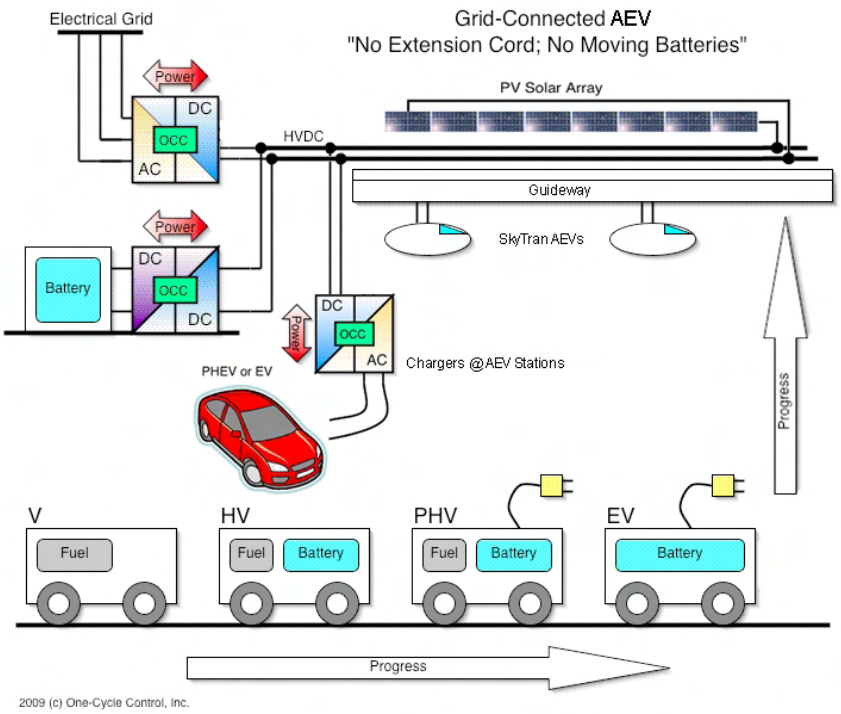

Figure 1 - The Universal Infrastructure Backbone uses One Cycle Control (OCC) technology for power management and grid support. OCC development has been supported by California Energy Commission grants.

The key to deriving these benefits is to increase the convenience, desirability and therefore, ridership of public transit. SkyTran has developed such a system as it provides a level of service comparable to that of a car and can be built and operated without public subsidy. Key innovations include: 1) on-demand, point-to-point, non-stop service within the network; 2) average speeds of 45 mph in urban areas and highway speeds for longer trips; 3) capacity of 11,500 passengers per hour in each direction and; 4) improved access with as little as a quarter mile between stations; 5) improved safety by fully grade separated guideway and automated control. Unlike bus and rail, which recover no capital costs and only partial O&M costs, SkyTran's business model allows for full cost recovery of capital and O&M costs.

SkyTran Inc. has proposed to the Federal Transit Administration that the company develop a proof of concept of its AEV technology and then incrementally deploy a Automated Transit Network (ATN) that extends from the NASA Ames Research Park to the greater Mountain View, CA area. In the short term, the plan calls for a developmental stage Hardware Reference Platform (HRP) to be built at the NASA Ames Research Park. The HRP will be constructed in two phases over 18 months at a cost of $3.4 million. SkyTran Inc. is requesting that the EPIC program consider providing match funds to FTA and private investor contributions.

After HRP evaluations are completed, a privately funded Initial Operating Segment (IOS) connecting the NASA Ames campus to a nearby light rail station will be built and commissioned for public use. The IOS will be constructed in 12 months followed by a commissioning process at a budget of $19.25 million. Subsequently, a Mountain View Automated Transit Network (MV-ATN) will be built for a cost of $117 million and

commissioned within 24 months as a public-private partnership. Based upon real-time traffic simulation of the SkyTran system, the 13-mile network can serve five central stations and 16 smaller stations using 500 vehicles to handle up to 8,000 passengers per hour. The system has the capacity to alleviate projected trip demand in the area over the next decade and can be scaled to handle additional growth beyond.

The proposed plan provides an opportunity to demonstrate an innovative AEV technology solution that benefits and improves grid performance while leveraging existing public transit assets to increase overall local ridership, greatly improve regional connectivity, and reduce vehicle miles traveled (VMT). Demonstrating SkyTran technology and the subsequent deployment of the MV-ATN is a project of national significance as it can serve as a model for transit-oriented development and, in California, support key EPIC/CEC goals and help communities meet SB 375 greenhouse gas reduction targets as part of their region's Sustainable Communities Strategy (SCS) and meet California solar energy targets.

The HRP project at NASA will demonstrate all basic functions of the system as well as provide a platform to test the energy efficiency and grid stabilization capabilities necessary for assuring the reliability of the power grid as more renewables are added to the system. EPIC's support for the SkyTran technology demonstration and deployment will result in the installation and operation of a pre-commercial technology at a scale sufficiently large and in conditions sufficiently reflective of anticipated actual operating environments to enable appraisal of the operational and performance characteristics and the financial risks.

Best regards,

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