CALIFORNIA
AIR RESOURCES BOARD

EXECUTIVE ORDER B-77
Relating to Conversion of On-Highway Vehicles to Electricity

Lightning Hybrid, LLC
City Transit Bus LEV Repower

Pursuant to the authority vested in the undersigned by Section 39515 and Section 39516 of the Health and Safety Code and Executive Order G-19-095; and

Pursuant to Health and Safety Code Section 43004, which provides, in pertinent part, that the standards applicable for exhaust emissions for gasoline powered motor vehicles shall apply to motor vehicles which have been modified or altered to use a fuel other than gasoline or diesel; and

Pursuant to Health and Safety Code Section 43006, which provides that the Air Resources Board may certify the fuel system of any motor vehicle powered by a fuel other than gasoline or diesel which meets the standards specified by Section 43004; and

Pursuant to Vehicle Code Sections 27156 and 38395, which provide in pertinent part that the prohibitions in Section 27156 and Section 38391, respectively, regarding alterations, modifications or modifying devices, apparatuses or mechanisms which modify or alter the original design or performance of required motor vehicle or off-highway motor vehicle pollution control devices or systems shall not apply to alterations, modifications, or modifying devices, apparatuses, or mechanisms found by the Air Resources Board to not reduce the effectiveness of required motor vehicle or off-highway motor vehicle pollution control devices or result in emissions from any such modified or altered vehicle or off-highway vehicle which are at levels which comply with existing state or federal standards for the model year of the vehicle or off-highway motor vehicle being modified or converted;

IT IS ORDERED AND RESOLVED: That the City Transit Bus LEV Repower electric conversion system manufactured by Lightning Hybrid, LLC of 815 14th Street SW Loveland, Colorado 80537 is approved for installation on 2001 through 2014 Model Year On Highway Heavy-Duty Motor Vehicles, equipped with a Cummins Diesel engine, listed in Exhibit A, of this document.

BE IT FURTHER RESOLVED: That because the motor vehicles converted in accordance with the systems covered by this order are powered by battery-stored electricity and have no on-board systems which consume any fuel other than electricity; the vehicles have no exhaust emissions and therefore comply with the exhaust emission standards applicable to 2004 and Subsequent Model Heavy-Duty Diesel

Engines and Vehicles for use on Heavy-Duty Urban Bus Vehicles, over 14,000 pounds GVWR, or less stringent standards.

The City Transit Bus LEV Repower system includes the following major components:

Component	MFR Part Number	Description
Motor	HD220+	UQM PowerPhase HD220+
Motor Controller / Inverter	HD220+	UQM PowerPhase HD220+
Energy Storage System	Apricot	Octillion Battery Pack
Battery Management System	Apricot	Octillion (Packaged with battery system)
Vehicle Control Unit	GCM196	New Eagle
PDC/DC	350DNC40-24-8G	Power Supply/Voltage Regulators, Bel Power Solutions & Protection
Transmission	2SP_EV	Eaton, 2-speed
Battery Chargers	EM5Z-10B68-9B H1FZ-14G49-0B H1FZ-14A30-3B	Battery charging system (level 3)
A/C Unit	X426	Thermo King A/C compressor
Heating Unit	CV6Z-18K463-D	4 x 6kW PTC heaters for cabin heating + 1 for battery thermal management
Coolant Pumps	2020041039P0001 2020041040P0001 1030002277P0024	3 x EMP WP29, 24V Power electronics & battery thermal management

BE IT FURTHER RESOLVED: That because the motor vehicles converted in accordance with the systems covered by this order have no parts that affect emissions for which there is an applicable emission requirement, the conversion system manufacturer is not required to provide an emission control system warranty pursuant to Health and Safety Code Section 43205 or 43205.5, or Title 13, California Code of Regulations, Sections 2035 et seq, 2425, 2435 and 2436. Motor vehicles converted in accordance with the system covered by this order shall not be equipped with any on-board system which consumes any fuel other than electricity. Any changes to the design or operating conditions of their system which violates this condition shall invalidate this Executive Order.

Marketing of the City Transit Bus LEV Repower system using any identification other than that shown in this Executive Order or marketing of the City Transit Bus LEV Repower system for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

Exemption of the City Transit Bus LEV Repower system shall not be construed as an exemption to sell, offer for sale, or advertise any component of the assembly as individual devices.

This Executive Order shall not apply to any City Transit Bus LEV Repower system advertised, offered for sale, sold with, or installed on a new motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

This Executive Order does not constitute any opinion as to the effect the use of Lightning Hybrid, LLC City Transit Bus LEV Repower electric conversion system may have on any warranty either expressed or implied by the manufacturer.

In addition to the foregoing, the Air Resources Board reserves the right to review this Executive Order and the exemption provided herein to assure that the exempted vehicle conversion kit continues to meet the standards and procedures of Title 13, California Code of Regulations, Sections 2222, et seq. and 2470, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIM MADE BY THE APPLICANT CONCERNING THE RANGE, DURABILITY, OR SAFETY ASSOCIATED WITH THE USE OF LIGHTNING HYBRID, LLC'S CITY TRANSIT BUS LEV REPOWER SYSTEM.

Executed at El Monte, California, this 16TH day of August 2019.

Allen Lyons, Chief
Emissions Certification and Compliance Division

EXHIBIT-A

LIGHTNING HYBRID, LLC City Transit Bus LEV Repower					
P/N	**Truck Model**	**Intended Use**	**Engine Year**	**Engine Displ. (liters)**	**Engine Family Number**
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2001	8.8	1CEXH0540LAB
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2002	8.8	2CEXH0540LAB
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2003	8.8	3CEXH0540LAC
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2004	8.8	4CEXH0540LAE
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2005	8.8	5CEXH0540LAE
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2006	8.9	6CEXH0540LAJ
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2007	8.8	7CEXH0540LAO
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2008	8.9	8CEXH0540LAO
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2009	8.9	9CEXH0540LAO
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2010	8.9	ACEXH0540LAR
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2011	8.9	BCEXH0540LAR
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2012	8.9	CCEXH0540LAR
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2013	8.9	DCEXH0540LAT
LEV140RP	Gillig LLC 29 Ft. Low Floor	Urban Bus	2014	8.9	ECEXH0540LAT